FMECA ANALYSIS

Battery Charger board

Final Report

PREPARED FOR

xxx

PREPARED BY

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1.0 Failure Modes, Effects, and Criticality Analysis (FMECA)

1.1 Scope

This document contains the failure modes, effects, and criticality for all parts on the Battery Charger (Board xxx-1). This FMECA analysis consists of an outlining of all possible ***F***ailure ***M***odes of all elements, and then a determination of the ***E***ffects and ***C***riticality of these failure modes.

Analysis:	**FMECA Analysis**
Last Rev Date:	**9/27/06**
Assembly:	**Board 335BC102-1**
Subassemblies	
Excel File:	**FMECA Modes List.xls, FMECA_Criticality_Risks.xls**
Report Files:	**FMECA_Criticality.doc, Fmcea.doc**
Relex File	**(71C_FMECA.RPJ**

1.2 Assumptions

The following assumptions were made in order to complete this analysis.

- In situations where there are several failure results for one component failure mode, the most severe failure mode was documented in the analysis.
- Single component failures only were investigated. If the single component failure would cause another component to fail, this was taken into account. Otherwise, each component is considered as failing individually and not simultaneously with any other component.
- MIL-STD-1629A and Mil-Handbook-217 were used as the basis for the definition of the FMECA and component failure modes.

1.3 Analysis Results

Potential failure mode(s) for each part are listed in Excel and analyzed for local and higher level effects on the board and finally to the system. Tables are ranked according to the influence of severity and probability of occurrence. Severity is defined as the consequences of a failure as a result of a particular failure mode. Severity considers the worst potential consequence of a failure, determined by the degree of injury, property damage, or system damage that could ultimately occur. The severity of the failure mode is defined in
Table 1.3-1.

This classification is assigned to provide a qualitative measure of the worst potential consequences resulting from design error or item failure. Classifications are assigned to each identified failure mode and each item analyzed in accordance with the loss statements below. It may not be possible to identify an item or a failure mode according to the loss statements in the four categories, but similar loss statements based on various inputs and outputs can be developed and included in the ground rules for the FMECA activity. Severity classification categories that are consistent with MIL-STD-882 are defined as follows:

Table 1.3-1: Severity Type Description

Severity	**Description**
I. Catastrophic	A failure which may cause converter and system loss
II. Critical	A failure which may cause converter loss
III. Marginal	A failure which may cause degraded converter performance, reduced converter reliability, or reduced converter lifetime.
IV. Minor	A failure not serious enough to significantly affect the system or the converter performance.

Mode Criticality

Mode criticality is one of the more quantified methods used to analyze criticality. Mode criticality is a numerical value that can be calculated and applied to each failure mode. Mode criticalities are based on the FMECA approach defined in MIL-STD-1629. The mode criticalities are based on actual failure rate values. Initially, the failure rate of a component is established, then, a mode percentage is assigned to each possible failure mode of the component. For example, if a component has two failure modes, one occurring 75% of the time, and the other occurring 25% of the time. Using this information, a mode failure rate can be calculated by multiplying the component failure rate by the mode percentage. The analyst must also assess the failure effect probability, or the probability that the given failure effect is likely to occur. The equation for mode criticality is therefore given by:

Mode Criticality = Failure Effect Probability * Mode Failure Rate * Operating Time of the System

The criticality for each item is obtained by summing the criticalities for each failure mode that have been identified for each item.

The results of all mode criticalities are reported in FMECA_Criticality_Risks.xls.

Risk Level

Risk Level analysis allows failure modes to be grouped into established categories to ensure that the most critical items are evaluated. A graphical representation is used, where the x axis is a specified risk value such as severity. The y axis is a secondary risk factor such as occurrence. The graph is broken into three distinct areas by lines that intersect both axes. By graphing each failure mode, they will fall into one of the three graph areas: high, medium, or low (risks).

The analytical results of the FMECA analysis are shown in Table 1.3-2 and 1.3-3, as well as the following figures. For added usefulness, the results of Table 1.3-2 were sorted by criticality and reprinted in Table 1.3-3.

Table 1.3-2: FMECA Analysis Results

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
1	C100	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
2	C100	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
3	C101	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
4	C101	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
5	C102	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
6	C102	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
7	C103	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
8	C103	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
9	C104	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
10	C104	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
11	C105	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
12	C105	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
13	C106	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
14	C106	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
15	C107	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
16	C107	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
17	C108	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
18	C108	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
19	C109	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
20	C109	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
21	C110	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
22	C110	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
23	C111	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
24	C111	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
25	C112	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
26	C112	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
27	C113	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
28	C113	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
29	C114	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
30	C114	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
31	C115	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
32	C115	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
33	C116	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
34	C116	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
35	C117	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
36	C117	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
37	C122	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
38	C122	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of EMI Filtering	Will put excessive power in R104, R104 will burn open	Loss of EMI Filtering	Minor
39	C214	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased EMI		Increased EMI	Minor
40	C214	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increased EMI		Increased EMI	Minor
41	C403	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased Noise on VCC for U401	Erratic operation of U401, possible destruction of Q402, Q403,	Charger will not operate	Marginal
42	C403	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of Driver		Charger will not operate	Marginal
43	C239	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on inhibit line	Erratic operation of U205	Charger may operate erratically	Marginal
44	C239	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Inhibit function disabled		Charger will never turn off, battery will be overcharged	Marginal
45	C240	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on the low battery fault line		False low battery fault flickering	Minor
46	C240	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Low battery fault always on		Low battery fault always on	Minor
47	C309	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased Ripple on +10V		Possible premature switch into topping mode	Marginal
48	C309	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of +10V	Loss of 10V Reference Voltage	Temperature circuits will not operate, charger may remain in main mode charge	Marginal
49	C312	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased		Possible false	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						noise on fault line		triggering of the fault indicator	
50	C312	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Gate of Q300 shorted to ground		All fault signals will be disabled	Minor
51	C315	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Clock input to U305 will not function properly	Charger Topping timer circuit not functioning properly	Battery may not receive a full charge	Marginal
52	C315	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Clock input to U305 will not function		Charger will remain in topping mode, battery will be overcharged	Marginal
53	C321	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on the drain of Q300	Increased noise on the fault output	Possible false triggering of the fault indicator	Minor
54	C321	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	drain of Q300 grounded		Fault output will always register a fault	Minor
55	C313	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on Battery tap fault output	False triggering of the fault output	Possible false triggering of the fault indicator	Minor
56	C313	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Battery tap fault output shorted to ground		Battery tap fault will not register	Minor
57	C307	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
58	C307	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	U302A has the input shorted to ground	The charger will remain in main mode	Battery will be overcharged	Marginal
59	C118	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
60	C118	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI	Excessive power in	Loss of EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Filtering	R100, R100 will open	Filtering, Increased EMI	
61	C119	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
62	C119	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI Filtering	Excessive power in R101, R101 will open	Loss of EMI Filtering, Increased EMI	Minor
63	C120	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
64	C120	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI Filtering	Excessive power in R102, R102 will open	Loss of EMI Filtering, Increased EMI	Minor
65	C207	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
66	C207	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase B, phase B is shorted to chassis		Loss of Phase B, aircraft circuit breaker will trip	Marginal
67	C208	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
68	C208	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase C, phase C is shorted to the chassis		Loss of Phase C, aircraft circuit breaker will trip	Minor
69	C266	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
70	C266	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase A, phase A is shorted to chassis		Loss of Phase A, aircraft circuit breaker will trip	Marginal
71	C121	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
72	C121	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Loss of EMI Filtering	Will put excessive power in R103, R103 will burn open	Loss of EMI Filtering, Increased EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
73	C224	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
74	C224	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
75	C319	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Increase Noise on input of U301B		Possible false heater blanket fault	Minor
76	C319	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Reference on U301B input is grounded		False heater blanket over temp fault	Minor
77	C323	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Battery tap fault timer may not work correctly		Battery tap fault output may not register the failure	Minor
78	C323	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Battery tap fault timer may not work correctly		Battery tap fault output may not register the failure	Minor
79	C204	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering A-B		Reduced EMI filtering A-B, Increased EMI	Minor
80	C204	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering A-B	Will put excessive power in R204, R204 will burn open	Reduced EMI filtering A-B, Increased EMI	Minor
81	C205	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering B-C		Reduced EMI filtering B-C, Increased EMI	Minor
82	C205	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering B-C	Will put excessive power in R205, R205 will burn open	Reduced EMI filtering B-C, Increased EMI	Minor
83	C206	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering A-C		Reduced EMI filtering A-C, Increased EMI	Minor
84	C206	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering A-C	Will put excessive power in R206, R206 will burn open	Reduced EMI filtering A-C, Increased EMI	Minor
85	C210	CFR06RNE473KP, .047uF, 400V, 1	Capacitor	CFR06RNE473KP	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
86	C210	CFR06RNE473KP, .047uF, 400V, 1	Capacitor	CFR06RNE473KP	shorted	Loss of EMI	capacitor would	Loss of EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Filtering	quickly burn open	Filtering	
87	C217	CFR06RNE473KP, .047uF, 400V, 2	Capacitor	CFR06RNE473KP	open	Loss of Bus voltage filtering		Increased EMI	Minor
88	C217	CFR06RNE473KP, .047uF, 400V, 2	Capacitor	CFR06RNE473KP	shorted	Bus shorted to chassis		Increased EMI	Minor
89	C218	CFR06RNE473KP, .047uF, 400V, 3	Capacitor	CFR06RNE473KP	open	Loss of Bus voltage filtering		Increased EMI	Minor
90	C218	CFR06RNE473KP, .047uF, 400V, 3	Capacitor	CFR06RNE473KP	shorted	Bus shorted to chassis		Increased EMI	Minor
91	C211	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Reduced 24V Filtering		Reduced 15V stability	Minor
92	C211	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Loss of 15V		Charger will not operate	Marginal
93	C222	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased noise on current limit circuit		Peak current during charge is erratic	Marginal
94	C222	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Current limit reference is shifted		Peak charging current limit is shifted	Minor
95	C228	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased noise on Mosfet Drivers	Erratic operation of U401 and U400, possible destruction of Q400, 401, 402, 403	Charger will not operate	Marginal
96	C228	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Loss of Driver signal		Charger will not operate	Marginal
97	C234	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased EMI on charger output		Increased EMI on charger output	Minor
98	C234	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
99	C212	235BC833-1-, 150uF, 35V, 20%	Capacitor	235BC833-1-	open	Reduced 12V Filtering		Reduced 12V Filtering	Minor
100	C212	235BC833-1-, 150uF, 35V, 20%	Capacitor	235BC833-1-	shorted	Loss of 12V		Temperature circuits will not operate, charge may remain in	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								main mode charge	
101	C213	CKR05BX471KR,470pF,10%,200V,(R	Capacitor	CKR05BX471KR	open	Reduced 15V stability		Reduced 15V stability	Minor
102	C213	CKR05BX471KR,470pF,10%,200V,(R	Capacitor	CKR05BX471KR	shorted	Loss of 15V		Charger will not operate	Marginal
103	C215	U767D250VG47RM19X29LL,47uF,250	Capacitor	U767D250VG47RM19X29LL	open	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
104	C215	U767D250VG47RM19X29LL,47uF,250	Capacitor	U767D250VG47RM19X29LL	shorted	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
105	C216	U767D250VG47RM19X29LL,47uF,251	Capacitor	U767D250VG47RM19X29LL	open	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
106	C216	U767D250VG47RM19X29LL,47uF,251	Capacitor	U767D250VG47RM19X29LL	shorted	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
107	C219	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	open	Reduced 15V stability		Reduced 15V stability	Minor
108	C219	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	shorted	Loss of 15V		Charger will not operate	Marginal
109	C311	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	open	Increased noise on fault line		Possible false triggering of the fault indicator	Minor
110	C311	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	shorted	Gate of Q300 shorted to ground		All fault signals will be disabled	Minor
111	C401	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	FET Drive Signal Altered	Reduced VS bus I/V	reduced charger efficiency	Minor
112	C401	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	FET Drive Signal Altered	Reduced VS bus V, excessive current flow	Charger may not operate	Marginal
113	C225	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	PWM output signal does not reach T203	Loss of Power Transformer output	Charger will not operate	Marginal
114	C225	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	PWM output signal is altered	Signal reaching MOSFET Drivers is distorted	Charger may not operate, or will operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								erratically	
115	C402	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	FET Drive Signal Altered	Reduced VS bus I/V	reduced charger efficiency	Minor
116	C402	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	FET Drive Signal Altered	Reduced VS bus V, excessive current flow	Charger may not operate	Marginal
117	C221	M39014/01-1522,.0018uf,100V,10	Capacitor	M39014/01-1522	open	Increased noise on reference		Increased noise on charger output	Minor
118	C221	M39014/01-1522,.0018uf,100V,10	Capacitor	M39014/01-1522	shorted	TL431 Anode Ref shorted		Charger PWM voltage compensation is not working	Marginal
119	C223	CKR06BX104KM,.1uF,10%,100V,(M)	Capacitor	CKR06BX104KM	open	PWM Charger compensation is altered		Charger may not operate	Marginal
120	C223	CKR06BX104KM,.1uF,10%,100V,(M)	Capacitor	CKR06BX104KM	shorted	PWM Charger compensation is altered		Charger may not operate	Marginal
121	C229	M39014/01-1529,4700pf,100V,10%	Capacitor	M39014/01-1529	open	Increased noise on charger output		Increased EMI on charger output	Minor
122	C229	M39014/01-1529,4700pf,100V,10%	Capacitor	M39014/01-1529	shorted	Increased noise on charger output		Increased EMI on charger output	Minor
123	C230	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	open	Increased EMI on charger output		Increased EMI on charger output	Minor
124	C230	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI on charger output	Marginal
125	C231	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	open	Increased EMI on charger output		Increased EMI on charger output	Minor
126	C231	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								on charger output	
127	C232	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
128	C232	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI on charger output	Marginal
129	C233	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
130	C233	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
131	C235	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
132	C235	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
133	C236	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
134	C236	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
135	C302	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
136	C302	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Shifted sensor voltage	Higher temp then actual	False Hot battery fault	Minor
137	C303	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
138	C303	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Shorted temp	False Hot battery	False Hot battery	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						sensor	fault	fault	
139	C308	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on U302A		Possible premature switch into topping mode	Marginal
140	C308	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	U302A has the input shorted to ground	Charger will stay in main mode	Charger will never turn off, battery will be overcharged	Marginal
141	C310	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased Noise on VCC		Possible premature switch into topping mode	Minor
142	C310	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Loss of +10V	Loss of 10V Reference Voltage	Temperature circuits will not operate, charger may remain in main mode charge	Marginal
143	C314	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Input to U305 will not be filtered	Possible false timer counting resulting in lower time in topping mode	Battery may not receive a full charge	Marginal
144	C314	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Input to U305 will be shorted, 208 always on	Timer will always be operating, resulting in reduced time in topping mode	Battery may not receive a full charge	Marginal
145	C320	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Loss of filtering on U305 output	Charger may have excessive noise on the disable line	Charger may operate erratically	Marginal
146	C320	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Clock input can not be shut off on U305		Charger will remain in topping mode	Marginal
147	C324	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on U301C		Possible false battery heater blanket over temp fault	Minor
148	C324	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	U301C shorted		Heater blanket	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						to ground		over temp will never turn on	
149	C267	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on the battery heater blanket output	Resister R251 will burn open	Increased EMI on the heater blanket output	Minor
150	C267	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Resister R251 will burn open	Increased noise on the battery heater blanket output	Increased EMI on the heater blanket output	Minor
151	C305	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
152	C305	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	The temp voltage will be passed to the input of U302A	The charger will remain in main mode	Battery will be overcharged	Marginal
153	C237	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased EMI on charger output		Increased EMI on charger output	Minor
154	C237	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
155	C238	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased EMI on charger output		Increased EMI on charger output	Minor
156	C238	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
157	C300	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
158	C300	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Shorted temp sensor	False Hot battery fault	False Hot battery fault	Minor
159	C301	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								prematurely	
160	C301	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Shorted temp sensor	False Hot battery fault	False Hot battery fault	Minor
161	C317	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased Noise on main/topping line		Possible oscillations between main and topping mode	Marginal
162	C317	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Low on main / topping line		Charger will stay in topping mode	Marginal
163	C322	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Battery tap fault timer will not work correctly		Battery tap fault output will not register the failure	Minor
164	C322	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Battery tap fault timer will not work correctly		Battery tap fault output will not register the failure	Minor
165	C326	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on U301C		Possible false battery heater blanket over temp fault	Minor
166	C326	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	U301C shorted to ground		Heater blanket over temp will never turn on	Minor
167	C325	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on U301C		Possible false battery heater blanket over temp fault	Minor
168	C325	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	U301C shorted to ground		Heater blanket over temp will never turn on	Minor
169	C316	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Clock oscillator on U305 will not work correctly	Charger may stay in topping mode	Charger will overcharge the battery	Marginal
170	C316	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Clock oscillator on U305 will	Charger may stay in topping mode	Charger will overcharge the	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						not work correctly		battery	
171	C253	CKR06BX105KR,1uF,10%,50V,(R)	Capacitor	CKR06BX105KR	open	Increased noise on charger output		Increased EMI on charger output	Minor
172	C253	CKR06BX105KR,1uF,10%,50V,(R)	Capacitor	CKR06BX105KR	shorted	Increased noise on charger output		Increased EMI on charger output	Minor
173	C318	M39014/01-1523,2200pf,100V,10%	Capacitor	M39014/01-1523	open	Increase Noise on gate of Q301		Possible heater blanket oscillations	Minor
174	C318	M39014/01-1523,2200pf,100V,10%	Capacitor	M39014/01-1523	shorted	Gate of Q301 shorted to ground		Heater blanket will never turn on	Minor
175	C400	40L3101, 1uF, 400V, 10%	Capacitor	40L3101	open	Loss of Driver		Charger will not operate	Marginal
176	C400	40L3101, 1uF, 400V, 10%	Capacitor	40L3101	shorted	Increased noise on Mosfet Drivers	Erratic operation of U401 and U400, possible destruction of Q400, 401, 402, 403	Charger will not operate	Marginal
177	C306	M39014/01-1293,47pf,200V,10%	Capacitor	M39014/01-1293	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
178	C306	M39014/01-1293,47pf,200V,10%	Capacitor	M39014/01-1293	shorted	The temp voltage will be passed to the input of U302A	The charger will remain in main mode	Battery will be overcharged	Marginal
179	C304	FFB14D0336K, 33uF, 75V,10%	Capacitor	FFB14D0336K	open	No stored voltage across C271	Delta temp/time circuit will not work, charger will remain in main mode	Battery will be overcharged	Marginal
180	C304	FFB14D0336K, 33uF, 75V,10%	Capacitor	FFB14D0336K	shorted	U302A has the input shorted to ground	The charger will remain in main mode	Battery will be overcharged	Marginal
181	CR200	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase A	Increased ripple on the C215	Phase B and C will draw higher	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						rectification		current, this may trip the aircraft breaker	
182	CR200	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
183	CR201	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase A rectification	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
184	CR201	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
185	CR202	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase B rectification	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
186	CR202	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
187	CR203	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase B rectification	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
188	CR203	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
189	CR204	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of	Increased ripple on	Phase A and B	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						phase C rectification	the C215	will draw higher current, this may trip the aircraft breaker	
190	CR204	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
191	CR205	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase C rectification	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
192	CR205	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
193	CR216	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Main output rectifier is disable	Excessive noise on charger output	Charger may not operate, or will operate erratically	Marginal
194	CR216	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Excessive noise on charger output		Charger may not operate, or will operate erratically	Marginal
195	CR217	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Main output rectifier is disable	Excessive noise on charger output	Charger may not operate, or will operate erratically	Marginal
196	CR217	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Excessive noise on charger output		Charger may not operate, or will operate erratically	Marginal
197	CR206	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
198	CR206	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
199	CR207	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
200	CR207	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
201	CR208	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
202	CR208	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
203	CR209	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
204	CR209	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
205	CR400	1N5809,6 AMP, RECTIFIER	Diode	1N5809	open	FET Drive Signal Altered	Reduced VS bus I/V	Charger may not operate	Marginal
206	CR400	1N5809,6 AMP, RECTIFIER	Diode	1N5809	shorted	FET Drive Signal Altered	Dramatically Reduced VS bus I/V	Charger may not operate	Marginal
207	CR405	1N5809,6 AMP, RECTIFIER	Diode	1N5809	open	FET Drive Signal Altered	Reduced VS bus I/V	Charger may not operate	Marginal
208	CR405	1N5809,6 AMP, RECTIFIER	Diode	1N5809	shorted	FET Drive Signal Altered	Dramatically Reduced VS bus I/V	Charger may not operate	Marginal
209	CR402	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
210	CR402	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
211	CR401	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
212	CR401	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
213	CR404	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is	Charger may operate at a higher	Charger will be overstressed and	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						altered	then normal current	may fail to operate	
214	CR404	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
215	CR403	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
216	CR403	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
217	CR218	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
218	CR218	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
219	CR219	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
220	CR219	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
221	CR220	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
222	CR220	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
223	CR221	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
224	CR221	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
225	CR222	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Inhibit function disabled	Charger can not be shut off	Battery will be overcharged	Marginal
226	CR222	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Excessive current into opamp U205	Charger can not be shut off	Battery will be overcharged	Marginal
227	CR305	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Not path for U300 output	Cold battery shut down will not work	Battery will be overcharged at cold temperatures	Minor
228	CR305	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Direct current path into U300	Will disable hot battery shut down	Battery will be overcharged at high temperatures	Minor
229	CR304	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	No path for U303 output	Hot battery shut down will not work	Battery will be overcharged at high temperatures	Minor
230	CR304	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Possible high current input for U303	Will disable cold battery shut down	Battery will be overcharged at cold temperatures	Minor
231	CR308	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hot and open sensor fault will not shut down unit		Hot and open sensor fault will not shut down unit	Minor
232	CR308	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Will disable hot and cold battery shut down		Hot and open sensor fault will not shut down unit	Minor
233	CR309	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Signal out of		Hot battery fault	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						U301 will be disabled		will not work	
234	CR309	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Direct current path into U301	Will disable open sensor fault	Battery will be overcharged	Marginal
235	CR310	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hot bat fault, open sensor fault, and tap fault are disabled		Hot bat fault, open sensor fault, and tap fault are disabled	Minor
236	CR310	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Diode steering of fault outputs disabled	High current path into U301	Faults will not register	Minor
237	CR311	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Output of U302 disabled		Battery tap fault circuit will not work, battery will be charged in a faulted condition	Minor
238	CR311	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	U306 input is now a high current path into the IC		Battery tap fault circuit will not work, battery will be charged in a faulted condition	Minor
239	CR312	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	U301 output will not register the fault	Open sensor fault will not work	Battery will be overcharged	Marginal
240	CR312	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Possible high current input into U301	Hot battery fault may not work	Battery will be overcharged	Marginal
241	CR314	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Clock will not stop counting	Unit will return to topping mode after it should have shut off	Battery will be overcharged	Marginal
242	CR314	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Clock will not function correctly	Unit will remain in topping mode	Battery will be overcharged	Marginal
243	CR315	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Will prevent topping mode timer from disabling the	Charger will remain in main mode	Battery will be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						charger			
244	CR315	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the timer circuit, may damage U305		Charger will remain in main mode charge during a faulted condition, battery will be overcharged	Marginal
245	CR313	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Clock on U306 will not be disabled	battery tap fault will become intermittent	Battery may be overcharged	Marginal
246	CR313	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Clock on U306 may not operate correctly	3 minute timer on battery tap fault circuit may not operate correctly	Battery may be overcharged	Marginal
247	CR235	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hysteresis for U205 is inoperative	Oscillations in battery tap circuit	Battery tap circuit will fail, battery may be overcharged	Marginal
248	CR235	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Hysteresis for U205 is shifted or inoperative	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
249	CR236	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	High cell imbalance will not work	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
250	CR236	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the U205, may damage IC		Battery tap circuit will fail, battery may be overcharged	Marginal
251	CR237	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hysteresis for U205 is inoperative	Oscillations in battery tap circuit	Battery tap circuit will fail, battery may be overcharged	Marginal
252	CR237	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Hysteresis for U205 is shifted or inoperative	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
253	CR238	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Low cell imbalance will not work	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
254	CR238	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the U205, may damage IC		Battery tap circuit will fail, battery may be overcharged	Marginal
255	CR303	FJT1100	Diode	FJT1100	open	The heater blanket may be on when the charger is in main mode	Heater blanket will cause false delta T, causing premature switch to topping	Battery will be undercharged, or aircraft breaker may trip	Marginal
256	CR303	FJT1100	Diode	FJT1100	shorted	Additional current will leak into delta T circuit causing false triggering	Premature switching to topping mode	Battery will be undercharged	Minor
257	CR302	FJT1100	Diode	FJT1100	open	Will prevent U302 from latching on delta T	May cause charger to return to main mode charge	Battery will be overcharged	Marginal
258	CR302	FJT1100	Diode	FJT1100	shorted	Will push U302A input pin high, causing premature delta T	Cause charger to exit main mode prematurely	Battery will be undercharged	Minor
259	CR300	FJT1100	Diode	FJT1100	open	C271 will not be able to discharge on power down		Charger may register a false delta Temp when power cycling, battery may be undercharged	Minor
260	CR300	FJT1100	Diode	FJT1100	shorted	Delta T circuit will not work	Charger will remain in main mode	Battery may be overcharged	Marginal
261	CR301	FJT1100	Diode	FJT1100	open	C271 will not have bulk charge	Charger may terminate main mode prematurely	Battery may be undercharged	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
262	CR301	FJT1100	Diode	FJT1100	shorted	Delta T circuit will not work	Charger will remain in main mode	Battery may be overcharged	Marginal
263	J1	D38999-20WD15PN, CONNECTOR, CI	Connector	D38999-20WD15PN	open	No input power		Charger will not operate	Marginal
264	J1	D38999-20WD15PN, CONNECTOR, CI	Connector	D38999-20WD15PN	shorted	Connector will burn itself open		Charger will not operate, aircraft breaker will trip	Marginal
265	J103	WTB20SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB20SAD9SY342	open	No input power		Charger will not operate	Marginal
266	J103	WTB20SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB20SAD9SY342	shorted	Connector will burn itself open		Charger will not operate, aircraft breaker will trip	Marginal
267	J104	WTB24SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB24SAD9SY342	open	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
268	J104	WTB24SAD9SY342, STRAIGHT CONE	Connector	WTB24SAD9SY342	shorted	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
269	J2	D38999-20WD97PN, CONNECTOR, CI	Connector	D38999-20WD97PN	open	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
270	J2	D38999-20WD97PN, CONNECTOR, CI	Connector	D38999-20WD97PN	shorted	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
271	J205	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Mosfet drivers are disabled		Charger will not operate	Marginal
272	J205	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
273	J206	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Main transformer is disabled		Charger will not operate	Marginal
274	J206	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Main transformer is shorted		Charger will not operate, aircraft breaker will trip	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
275	J207	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Mosfet drivers are disabled		Charger will not operate	Marginal
276	J207	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
277	L100	335BC105-1, COMMON MODE CHOKE	Inductor	335BC105-1	open	Lose of Phase A, B or C	Increased current on remaining phases	Blow aircraft breaker	Marginal
278	L100	335BC105-1, COMMON MODE CHOKE	Inductor	335BC105-1	shorted	Unbalanced Input V, excessive currents		Blow aircraft breaker	Marginal
279	L101	335BC108-1, INDUCTOR ASSEMBLY	Inductor	335BC108-1	open	Lose of Phase A, B or C	Increased current on remaining phases	Blow aircraft breaker	Marginal
280	L101	335BC108-1, INDUCTOR ASSEMBLY	Inductor	335BC108-1	shorted	Unbalanced Input V, excessive currents		Blow aircraft breaker	Marginal
281	L201	235BC103-1, INDUCTOR	Inductor	235BC103-1	open	Loss of DC buss voltage		Charger will not operate	Marginal
282	L201	235BC103-1, INDUCTOR	Inductor	235BC103-1	shorted	Increased EMI on DC buss		Increased EMI on the charger output and input power cables	Minor
283	L202	235BC103-1, INDUCTOR	Inductor	235BC103-1	open	Loss of DC buss voltage		Charger will not operate	Marginal
284	L202	235BC103-1, INDUCTOR	Inductor	235BC103-1	shorted	Increased EMI on DC buss		Increased EMI on the charger output and input power cables	Minor
285	L203	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	open	No charger output		Charger will not operate	Marginal
286	L203	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	shorted	Increased EMI on the charger output		Increased EMI on the charger output	Minor
287	L204	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	open	No charger output		Charger will not operate	Marginal
288	L204	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	shorted	Increased EMI		Increased EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						on the charger output		on the charger output	
289	L205	335BC107-1, INDUCTOR ASSEMBLY	Inductor	335BC107-1	open	No charger output		Charger will not operate	Marginal
290	L205	335BC107-1, INDUCTOR ASSEMBLY	Inductor	335BC107-1	shorted	Increased EMI on the charger output		Increased EMI on the charger output	Minor
291	L206	BEAD, FERRITE, FAIRITE, 267301	Inductor	2673015301	open	Heater blanket will not work		Charger will remain in cold hold off mode and never charge the battery	Minor
292	L206	BEAD, FERRITE, FAIRITE, 267301	Inductor	2673015301	shorted	Increased noise on heater blanket circuit		Increased noise on heater blanket circuit	Minor
293	P203	WTB20PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	open	Battery tap is missing	Tap circuit will register a fault	Charger will shut down based on the tap fault	Marginal
294	P203	WTB20PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	shorted	Several signal are shorted together		Charger will not operate	Marginal
295	P204	WTB24PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	open	Charger output is open		Charger will not operate	Marginal
296	P204	WTB24PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	shorted	Charger output is shorted		Charger will not operate, aircraft breaker will trip	Marginal
297	P205	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	open	Mosfet drivers are disabled		Charger will not operate	Marginal
298	P205	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
299	P206	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	open	Main transformer is disabled		Charger will not operate	Marginal
300	P206	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Main transformer is shorted		Charger will not operate, aircraft breaker will trip	Marginal
301	P207	WT4PRD8, 4 POSITION RIGHT	Connector	WT4PRD8-Top	open	Mosfet drivers		Charger will not	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
		ANGLE				are disabled		operate	
302	P207	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
303	Q400	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Bus connection	Reduced Bridge bus I/V	Charger will not operate	Marginal
304	Q400	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bus connected to CS XFMR	Overvoltage/Current on Bridge Bus	Charger will not operate	Marginal
305	Q401	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Ground connection	Overvoltage on Bridge Bus	Charger will not operate	Marginal
306	Q401	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bridge Bus Grounded	Low voltage/High I on Bridge Bus	Charger will not operate	Marginal
307	Q402	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Bus connection	Reduced VS bus I/V	Charger will not operate	Marginal
308	Q402	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bus connected to Power XFMR	Overvoltage/Current on VS Bus	Charger will not operate	Marginal
309	Q403	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Ground connection	Overvoltage on VS Bus	Charger will not operate	Marginal
310	Q403	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bridge Bus Grounded	Low voltage/High I on Bridge Bus	Charger will not operate	Marginal
311	Q202	2N2907AJANTX,TRANS,PNP,60VCE	Transistor	2N2907AJTX	open	Main/topping mode is disabled		Battery may be overcharged	Marginal
312	Q202	2N2907AJANTX,TRANS,PNP,60VCE	Transistor	2N2907AJTX	shorted	Main/topping mode is disabled		Battery may be overcharged	Marginal
313	Q205	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	open	Low battery fault always off		Low battery fault will not register	Minor
314	Q205	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	shorted	Low battery fault always on		Low battery fault always on	Minor
315	Q300	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	open	Fault output will never register		A fault condition will never be known	Minor
316	Q300	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	shorted	Fault output is always on		Fault output is always on	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
317	Q301	2N6764JANTX,POWER-MOSFET,N-CHA	MOSFET	2N6764JTX	open	Heater blanket will not work	Battery will never increase in temperature	Charger will never charge the battery, a low battery fault will occur, only under cold conditions	Minor
318	Q301	2N6764JANTX,POWER-MOSFET,N-CHA	MOSFET	2N6764JTX	shorted	Heater blanket always on	Battery will over temp	Charger will turn off, a fault will register	Minor
319	R100	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
320	R101	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
321	R102	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
322	R240	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI filtering on charger output		Increased EMI on charger output	Minor
323	R313	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	Open sensor	False open sensor fault	Charger will turn off, a fault will register	Minor
324	R214	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	15V goes to 24V (Vin)		Charger PWM may be overstressed, charger may not operate	Marginal
325	R358	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	2nd thermistor will lose bias		back up heater circuit will not function	Marginal
326	R103	RLR07C2870FS 287ohm 1% 1/4W (S	Resistor	RLR07C2870FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
327	R204	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering A-B		Reduced EMI filtering A-B	Minor
328	R205	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering B-C		Reduced EMI filtering B-C	Minor
329	R206	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering A-C		Reduced EMI filtering A-C	Minor
330	R104	RCR07C2R7JS,2.7ohm,5%,1/4W (S)	Resistor	RCR07G2R7JS	open	Loss of EMI		Loss of EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Filtering		Filtering	
331	R208	RWR81S1001FR 1K 0.1% 1W (R)	Resistor	RWR81S1001FR	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
332	R212	RWR81S1001FR 1K 0.1% 1W (R)	Resistor	RWR81S1001FR	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
333	R209	RWR80S4R99FS 4.99ohm 0.1% 2W (	Resistor	RWR80S4R99FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
334	R211	RWR80S4R99FS 4.99ohm 0.1% 2W (	Resistor	RWR80S4R99FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
335	R210	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
336	R400	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
337	R401	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
338	R403	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
339	R404	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
340	R238	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
341	R251	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Current limit for C267	More noise on heater blanket, or coming in from heater blanket	Loss of EMI Filtering	Minor
342	R213	RLR07C2490FS,249ohm,1%,1/4W (S	Resistor	RLR07C2490FS	open	Loss of 15V, 15V drops below 2V		Charger will not operate	Marginal
343	R215	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
344	R216	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
345	R332	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Hot battery shut down feedback voltage loss	Charger will shut off on false hot battery	Charger is disabled	Marginal
346	R217	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of control	Charger may	Battery may be	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						of the voltage of U202	operate at higher then normal voltages	overcharged	
347	R242	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of reference on U205 Input	Inhibit function will always be on	Charger will not operate	Marginal
348	R243	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of inhibit signal		Battery may be overcharged	Marginal
349	R314	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Temp sensor loses bias	False hot battery fault	Charger is disabled	Marginal
350	R319	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Heater control reference loss	Battery heater blanket never comes on	Charger may not operate under cold conditions	Marginal
351	R320	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Hot battery shut down reference loss	Charger shuts off on false hot battery	Charger is disabled	Marginal
352	R323	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Cold battery shut down reference loss	Charger does not shut off on cold battery	Battery may be overcharged under cold conditions	Marginal
353	R324	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Hot battery fault reference loss	No hot battery fault	Battery may be overcharged under hot conditions	Marginal
354	R327	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Open sensor reference loss	No open sensor fault	Battery will be overcharged	Marginal
355	R317	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Floating input to op-amp	Never terminating main mode charge	Battery will be overcharged	Marginal
356	R328	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of temp sensor input to delta Temp circuit	Never terminating main mode charge	Battery will be overcharged	Marginal
357	R339	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Inverter will not function	Charger may be on when battery heater is on, causing false DT	Battery may be undercharged during cold temperature operation	Minor
358	R343	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Inverter input	Hot battery shut	Battery will be	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						loss U303B	down will not function	charged during hot conditions, reducing battery life	
359	R344	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	U301 will not be able to output a fault signal		Back up heater turn off circuit will not be able to show a fault	Minor
360	R252	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
361	R255	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
362	R311	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of temp sensor input to op-amp	False triggering of DT/DT circuit, no main mode charge function	Battery may be undercharged	Minor
363	R218	RNC55H9091FS 9.09K 1% 1/8W (S)	Resistor	RNC55H9091FS	open	U202 anode floating	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
364	R219	RNC55H9091FS 9.09K 1% 1/8W (S)	Resistor	RNC55H9091FS	open	Reduces the 12V supplied to N+ on U203	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
365	R220	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of the 12V supplied to U203	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
366	R221	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Q202 will lose base drive	Current limit circuit will operate erratically	Battery may be overcharged	Marginal
367	R228	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	VREF output of the PWM is lost	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
368	R233	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	PWM	Charger will operate	Charger may not	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Feedback compensation circuit is disabled	erratically	operate, or may be overstressed	
369	R237	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
370	R239	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
371	R331	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to hot battery shut down	Charger will not turn off on hot battery	Battery may be overcharged under hot conditions	Marginal
372	R333	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to cold battery shut down	Charger will not turn off on cold battery	Battery may be overcharged under cold conditions	Marginal
373	R336	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to hot battery fault	No hot battery fault	Battery may be overcharged under hot conditions	Marginal
374	R338	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to open sensor fault	No open sensor fault	Open sensor fault inoperative	Minor
375	R347	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	U305 will lose input trigger (reset)	Charger will not operate in topping mode	Battery will be overcharged	Marginal
376	R222	RLR07C1693FS,169K,1%,1/4W (S)	Resistor	RLR07C1693FS	open	PWM will lose part of the reference	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
377	R330	RLR07C1693FS,169K,1%,1/4W (S)	Resistor	RLR07C1693FS	open	Heater control feedback voltage loss	Battery heater will stay on	Battery may be heated extremely high by the heater blanked	Marginal
378	R402	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased base drive current for Q202	Reduced charger output current	Charger will not operate, or operate at a	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								lower current	
379	R226	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
380	R227	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
381	R229	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
382	R230	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Current limiting circuit is disabled		Charger will operate at a higher then normal current	Minor
383	R232	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	PWM Feedback compensation circuit is disabled	Charger will operate erratically	Charger may not operate, or may be overstressed	Marginal
384	R312	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Open sensor	False open sensor fault	Charger is disabled	Marginal
385	R329	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Loss of temp sensor input to heater control	Battery heater will never turn on	Battery may never charge under cold conditions	Marginal
386	R350	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	U301 will lose a reference	Back up heater turn off will always show a fault	Fault indicator is always on	Minor
387	R359	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	2nd thermister will lose bias		back up heater circuit will not function	Marginal
388	R231	RNC55H5112FS 51.1K 1% 1/8W (S)	Resistor	RNC55H5112FS	open	PWM Feedback compensation circuit is	Charger will operate erratically	Charger may not operate, or may be overstressed	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						disabled			
389	R236	RLR07C2212FS,22.1K,1%,1/4W (S)	Resistor	RLR07C2212FS	open	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
390	R241	RLR07C35R7FS 35.7ohm 1% 1/4W (	Resistor	RLR07C35R7FS	open	Loss of EMI filtering on charger output		Increased EMI on charger output	Minor
391	R244	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Loss of inhibit bias	Inhibit function may not work	Battery may be overcharged	Marginal
392	R245	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Low battery fault circuit is disabled		Low battery fault will not work	Minor
393	R246	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Low battery fault will always be enabled		Low battery fault will always stay on	Minor
394	R334	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Cold battery shut down feedback voltage loss	Charger will shut off on false cold battery	Charger is disabled	Marginal
395	R341	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	U301B will lose a reference	Battery heater blanket over temp fault is inoperative	Battery may be excessively heated by the heater blanket	Marginal
396	R349	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	U301 will lose a reference	Back up heater turn off will not show a fault	Fault indicator is always on	Minor
397	R308	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Clock on U306 will not operate	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal
398	R247	RLR07C1000FS,100ohm,1%,1/4W (S	Resistor	RLR07C1000FS	open	Low battery fault disabled		Low battery fault will not register	Minor
399	R360	RLR07C1000FS,100ohm,1%,1/4W (S	Resistor	RLR07C1000FS	open	Battery fault indicator signal path opened	Battery fault indicator will not function	Fault indicator is always off	Minor
400	R248	RJR24CW103R,VAR.-RES.,10K,10%,	Resistor	RJR24CW103R	open	Loss of U202 Ref control	Charger may go to a higher then normal voltage	Battery may be overcharged	Marginal
401	R316	RLR07C4640FS 464ohm 1% 1/4W (S	Resistor	RLR07C4640FS	open	Open sensor	False open sensor	Charger is	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
							fault	disabled	
402	R315	RLR07C4223FS 422K 1% 1/4W (S)	Resistor	RLR07C4223FS	open	Shifted sensor voltage - colder	False charger temperature functions	Charger will not operate correctly	Marginal
403	R318	RNC55H5902FS 59K 1% 1/8W (S)	Resistor	RNC55H5902FS	open	Heater control reference loss	Battery heater blanket stays on	Battery may be heated extremely high by the heater blanked	Minor
404	R321	RLR07C3832FS 38.3K 1% 1/4W (S)	Resistor	RLR07C3832FS	open	Hot battery shut down reference loss	Charger does not shut off on hot battery	Battery may be overcharged	Marginal
405	R322	RNC55H2742FS 27.4K 1% 1/8W (S)	Resistor	RNC55H2742FS	open	Cold battery shut down reference loss	Charger shuts off on false cold battery	Charger is disabled	Marginal
406	R325	RNC55H1742FS 17.4K 1% 1/8W (S)	Resistor	RNC55H1742FS	open	Hot battery fault reference loss	False hot battery fault	Charger is disabled	Marginal
407	R326	RNC55H2612FS 26.1K 1% 1/8W (S)	Resistor	RNC55H2612FS	open	Open sensor reference loss	False open sensor fault	Charger is disabled	Marginal
408	R335	RLR07C3483FS 348K 1% 1/4W (S)	Resistor	RLR07C3483FS	open	Loss of voltage shift on op-amp	Loss of hysteresis on hot bat fault indicator	Fault indicator may flicker	Minor
409	R356	RLR07C3483FS 348K 1% 1/4W (S)	Resistor	RLR07C3483FS	open	U301C feed back resister hysteresis		Back up heater turn off circuit may oscillate	Minor
410	R337	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	Loss of voltage shift on op-amp	Loss of hysteresis on open sensor fault	Fault indicator may flicker	Minor
411	R351	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U305 will lose clock source	Charger will not come out of topping mode	Battery will be overcharged	Marginal
412	R346	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U306 clock reference	Battery tap fault timer may not function, inoperative battery tap fault	Battery may be overcharged	Marginal
413	R297	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U205B tap fault will not latch	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
414	R298	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U205B tap fault will not latch	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal
415	R340	RLR07C4752FS 47.5K 1% 1/4W (S)	Resistor	RLR07C4752FS	open	Mosfet 208 will not turn on	Battery heater will not function, charger may never operate	Charger will not operate at cold temperatures	Minor
416	R254	RLR07C4752FS 47.5K 1% 1/4W (S)	Resistor	RLR07C4752FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
417	R342	RLR07C4751FS 4.75K 1% 1/4W (S)	Resistor	RLR07C4751FS	open	U301B will lose a reference	Battery heater over temp fault will not work	Fault indicator is always on	Minor
418	R357	RLR07C4751FS 4.75K 1% 1/4W (S)	Resistor	RLR07C4751FS	open	U301C will lose a reference		Inoperative back up heater turn off circuit	Minor
419	R352	RLR07C6813FS 681K 1% 1/4W (S)	Resistor	RLR07C6813FS	open	U305 will lose clock source	Charger will not come out of topping mode	Battery will be overcharged	Marginal
420	R348	RLR07C2552FS,25.5K,1%,1/4W (S)	Resistor	RLR07C2552FS	open	Q202 will lose base drive	Charger will not come out of main mode	Battery will be overcharged	Marginal
421	R353	LVR2-0.01-3%,.01ohm,2W,3%	Resistor	LVR2-0.01-3%	open	U301 will lose a reference	Back up heater turn off will always show a fault	Fault indicator is always on	Minor
422	R345	RLR07C2003FS,200K,1%,1/4W (S)	Resistor	RLR07C2003FS	open	Q300 gate discharge path is lost	Q300 may not be able to turn off, Fault indicator always on	Fault indicator is always on	Minor
423	R354	RNC55H3832FS 38.3K 1% 1/8W (S)	Resistor	RNC55H3832FS	open	U301C will lose a reference		Inoperative back up heater turn off circuit	Minor
424	R355	RNC55H1002FS 10K 1% 1/8W (S)	Resistor	RNC55H1002FS	open	U301C will lose a reference		Inoperative back up heater turn off circuit	Minor
425	R296	RLR07C1005GR,10Meg,2%,1/4W (R)	Resistor	RLR07C1005GR	open	U306 tap fault timer will not be triggered	Battery tap fault will not register, charger will not shut off on	Battery may be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
							fault		
426	R300	RNC55H3652FS 36.5K 1% 1/8W (S)	Resistor	RNC55H3652FS	open	2nd thermister will lose bias		back up heater circuit will not function	Marginal
427	R253	RNC55H1052FS 10.5K 1% 1/8W (S)	Resistor	RNC55H1052FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
428	R309	RLR07C5114FS 5.11Meg 1% 1/4W (	Resistor	RLR07C5114FS	open	Cap 271 not able to discharge	Loss of delta time circuit function for DT/DT circuit	Battery may be undercharged	Minor
429	R310	RLR07C1005FS,10Meg,1%,1/4W (S)	Resistor	RLR07C1005FS	open	Cap 271 not able to charge fully	Loss of delta time circuit function for DT/DT circuit	Battery may be undercharged	Minor
430	T200	1.5R18CT,115VAC, 400Hz, 1 PHASE	Transformer	1.5R18CT	open	Loss of bias voltages		Charger will not operate	Marginal
431	T200	1.5R18CT,115VAC, 400Hz, 1 PHASE	Transformer	1.5R18CT	shorted	Loss of bias voltages, transformer may burn open		Charger will not operate	Marginal
432	T400	335BC109-1, CURRENT SENSE TRAN	Transformer	335BC109-1	open	Loss of current feedback voltage	Charger may operate at higher then normal currents	Aircraft breakers may trip	Marginal
433	T400	335BC109-1, CURRENT SENSE TRAN	Transformer	335BC109-1	shorted	Loss of current feedback voltage	Charger may operate at higher then normal currents	Aircraft breakers may trip	Marginal
434	T202	335BC115-1, PLANNAR TRANSFORMER	Transformer	335BC115-1	open	Loss of main output current		Charger will not operate	Marginal
435	T202	335BC115-1, PLANNAR TRANSFORMER	Transformer	335BC115-1	shorted	Excessive current in T202		Aircraft breakers may trip	Marginal
436	T203	335BC116-1, CURRENT SENSE TRAN	Transformer	335BC116-1	open	Loss of gate driver signal		Charger will not operate	Marginal
437	T203	335BC116-1, CURRENT SENSE TRAN	Transformer	335BC116-1	shorted	Loss of gate driver signal		Charger will not operate	Marginal
438	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Hi	Bottom FET On	Q401 will self destruct due to excessive currents	Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
439	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Hi	Top FET On	Q400 will self destruct due to excessive currents	Charger will not operate	Marginal
440	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Hi	Bridge Bus Voltage Low	Q400, Q401 will see higher then normal currents	Charger may not operate at rated current	Minor
441	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Hi	Bottom FET On	Q403 will self destruct due to excessive currents	Charger will not operate	Marginal
442	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Hi	Top FET On	Q402 will self destruct due to excessive currents	Charger will not operate	Marginal
443	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Hi	Bridge Bus Voltage Low	Q402, Q403 will see higher then normal currents	Charger may not operate at rated current	Minor
444	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Lo	Bottom FET Off		Charger will not operate	Marginal
445	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Lo	Top FET Off		Charger will not operate	Marginal
446	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Lo	Bridge Bus Grounded		Charger will not operate	Marginal
447	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Lo	Bottom FET Off		Charger will not operate	Marginal
448	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Lo	Top FET Off		Charger will not operate	Marginal
449	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Lo	Bridge Bus Grounded		Charger will not operate	Marginal
450	U202	5962-8410901PX, ADJUSTABLE PRE	Driver	5962-8410901PX	short	Voltage reference into U203 is too low	Charger peak voltage is reduced	Charger may not charge battery correctly	Minor
451	U202	5962-8410901PX, ADJUSTABLE PRE	Driver	5962-8410901PX	open	Voltage reference into U203 is too high	Charger peak voltage is increased	Charger may not charge battery correctly	Minor
452	U203	UC1846,Current Mode PWM Controller	Controller	UC1846	high	Mosfet Drivers will not function		Charger will not operate	Marginal
453	U203	UC1846,Current Mode PWM Controller	Controller	UC1846	low	Mosfet Drivers will not function		Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
454	U205	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Cold battery shut down will be enabled	Charger will shut down	Charger will not operate	Marginal
455	U205	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Hot battery shut down will be enabled	Charger will shut down	Charger will not operate	Marginal
456	U300	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal
457	U300	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal
458	U301	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal
459	U301	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Battery hot and open sensor faults will not be enabled	Charger will not shut down on these faults	Battery may be overcharged	Marginal
460	U305	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	high	False end to the topping mode	Charger will skip topping mode	Battery may be undercharged	Minor
461	U305	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	low	Charger will never complete topping mode		Battery may be undercharged	Minor
462	U306	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	high	False output of battery cell imbalance		Fault indicator is always on	Minor
463	U306	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	low	Charger will never register a cell imbalance		Battery may be overcharged	Marginal
464	U303	M38510/05553, BUFFER/CONVERTER	Converter	M38510/05553	high	false hot battery fault		Fault indicator is always on	Minor
465	U303	M38510/05553, BUFFER/CONVERTER	Converter	M38510/05553	low	unable to register a hot battery fault		Battery may be overcharged	Marginal
466	U304	REF01,10V-PRECISION-REF	voltage ref	REF01	high	Reference is in an overvoltage condition	All temp circuitry will not function correctly	Erratic charger behavior	Marginal
467	U304	REF01,10V-PRECISION-REF	voltage ref	REF01	low	All temp circuitry will be		Fault indicator is always on	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						in a faulted condition			
468	U213	LM117H,VOLTAGE-REGULATOR,TO-39	Regulator	LM117H	high	15V Over voltage		Erratic charger behavior	Marginal
469	U213	LM117H,VOLTAGE-REGULATOR,TO-39	Regulator	LM117H	low	Loss of 15V		Charger will not operate	Marginal
470	U302	AD712, DUAL-PRECISION, HIGH SP	Op-Amp	AD712	high	Charger will never register a delta T condition	Charger will remain in main topping mode	Battery will be overcharged	Marginal
471	U302	AD712, DUAL-PRECISION, HIGH SP	Op-Amp	AD712	low	Charger will always register a delta T condition	Charger will go directly to topping mode, skipping main mode	Battery may be undercharged	Minor

Table 1.3-3: Results sorted by Criticality

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
1	C403	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased Noise on VCC for U401	Erratic operation of U401, possible destruction of Q402, Q403,	Charger will not operate	Marginal
2	C403	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of Driver		Charger will not operate	Marginal
3	C239	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on inhibit line	Erratic operation of U205	Charger may operate erratically	Marginal
4	C239	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Inhibit function disabled		Charger will never turn off, battery will be overcharged	Marginal
5	C246	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased Ripple on +10V		Possible premature switch into topping mode	Marginal
6	C246	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of +10V	Loss of 10V Reference Voltage	Temperature circuits will not operate, charger may remain in main mode charge	Marginal
7	C252	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Clock input to U305 will not function properly	Charger Topping timer circuit not functioning properly	Battery may not receive a full charge	Marginal
8	C252	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Clock input to U305 will not function		Charger will remain in topping mode, battery will be overcharged	Marginal
9	C268	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	U302A has the input shorted to ground	The charger will remain in main mode	Battery will be overcharged	Marginal
10	C207	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase B, phase B is shorted to chassis		Loss of Phase B, aircraft circuit breaker will trip	Marginal
11	C266	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase A, phase A is shorted to		Loss of Phase A, aircraft circuit breaker will trip	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						chassis			
12	C224	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
13	C224	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
14	C211	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Loss of 15V		Charger will not operate	Marginal
15	C222	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased noise on current limit circuit		Peak current during charge is erratic	Marginal
16	C228	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased noise on Mosfet Drivers	Erratic operation of U401 and U400, possible destruction of Q400, 401, 402, 403	Charger will not operate	Marginal
17	C228	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Loss of Driver signal		Charger will not operate	Marginal
18	C212	235BC833-1-, 150uF, 35V, 20%	Capacitor	235BC833-1-	shorted	Loss of 12V		Temperature circuits will not operate, charge may remain in main mode charge	Marginal
19	C213	CKR05BX471KR,470pF,10%,200V,(R	Capacitor	CKR05BX471KR	shorted	Loss of 15V		Charger will not operate	Marginal
20	C215	U767D250VG47RM19X29LL,47uF,250	Capacitor	U767D250VG47RM19X29LL	open	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
21	C215	U767D250VG47RM19X29LL,47uF,250	Capacitor	U767D250VG47RM19X29LL	shorted	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
22	C216	U767D250VG47RM19X29LL,47uF,251	Capacitor	U767D250VG47RM19X29LL	open	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
23	C216	U767D250VG47RM19X29LL,47uF,251	Capacitor	U767D250VG47RM19X29LL	shorted	Increased ripple on 170VDC BUSS	PWM can not maintain control of system	Charger operates erratically	Marginal
24	C219	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	shorted	Loss of 15V		Charger will not operate	Marginal
25	C401	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	FET Drive Signal	Reduced VS bus V,	Charger may not	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Altered	excessive current flow	operate	
26	C225	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	PWM output signal does not reach T203	Loss of Power Transformer output	Charger will not operate	Marginal
27	C225	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	PWM output signal is altered	Signal reaching MOSFET Drivers is distorted	Charger may not operate, or will operate erratically	Marginal
28	C402	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	shorted	FET Drive Signal Altered	Reduced VS bus V, excessive current flow	Charger may not operate	Marginal
29	C221	M39014/01-1522,.0018uf,100V,10	Capacitor	M39014/01-1522	shorted	TL431 Anode Ref shorted		Charger PWM voltage compensation is not working	Marginal
30	C223	CKR06BX104KM,.1uF,10%,100V,(M)	Capacitor	CKR06BX104KM	open	PWM Charger compensation is altered		Charger may not operate	Marginal
31	C223	CKR06BX104KM,.1uF,10%,100V,(M)	Capacitor	CKR06BX104KM	shorted	PWM Charger compensation is altered		Charger may not operate	Marginal
32	C230	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI on charger output	Marginal
33	C231	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI on charger output	Marginal
34	C232	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Charger output shorted	Capacitor will quickly burn open	Charger may not operate, or Increased EMI on charger output	Marginal
35	C308	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on U302A		Possible premature switch into topping mode	Marginal
36	C308	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	U302A has the input shorted to ground	Charger will stay in main mode	Charger will never turn off, battery will be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
37	C310	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Loss of +10V	Loss of 10V Reference Voltage	Temperature circuits will not operate, charger may remain in main mode charge	Marginal
38	C314	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Input to U305 will not be filtered	Possible false timer counting resulting in lower time in topping mode	Battery may not receive a full charge	Marginal
39	C314	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Input to U305 will be shorted, 208 always on	Timer will always be operating, resulting in reduced time in topping mode	Battery may not receive a full charge	Marginal
40	C320	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Loss of filtering on U305 output	Charger may have excessive noise on the disable line	Charger may operate erratically	Marginal
41	C320	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Clock input can not be shut off on U305		Charger will remain in topping mode	Marginal
42	C305	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	The temp voltage will be passed to the input of U302A	The charger will remain in main mode	Battery will be overcharged	Marginal
43	C317	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased Noise on main/topping line		Possible oscillations between main and topping mode	Marginal
44	C317	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Low on main / topping line		Charger will stay in topping mode	Marginal
45	C316	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Clock oscillator on U305 will not work correctly	Charger may stay in topping mode	Charger will overcharge the battery	Marginal
46	C316	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Clock oscillator on U305 will not work correctly	Charger may stay in topping mode	Charger will overcharge the battery	Marginal
47	C400	40L3101, 1uF, 400V, 10%	Capacitor	40L3101	open	Loss of Driver		Charger will not operate	Marginal
48	C400	40L3101, 1uF, 400V, 10%	Capacitor	40L3101	shorted	Increased noise on Mosfet Drivers	Erratic operation of U401 and U400, possible destruction	Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
							of Q400, 401, 402, 403		
49	C306	M39014/01-1293,47pf,200V,10%	Capacitor	M39014/01-1293	shorted	The temp voltage will be passed to the input of U302A	The charger will remain in main mode	Battery will be overcharged	Marginal
50	C304	FFB14D0336K, 33uF, 75V,10%	Capacitor	FFB14D0336K	open	No stored voltage across C271	Delta temp/time circuit will not work, charger will remain in main mode	Battery will be overcharged	Marginal
51	C304	FFB14D0336K, 33uF, 75V,10%	Capacitor	FFB14D0336K	shorted	U302A has the input shorted to ground	The charger will remain in main mode	Battery will be overcharged	Marginal
52	CR200	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase A rectification	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
53	CR200	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
54	CR201	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase A rectification	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
55	CR201	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase B and C will draw higher current, this may trip the aircraft breaker	Marginal
56	CR202	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase B rectification	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
57	CR202	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
58	CR203	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase B	Increased ripple on the C215	Phase A and C will draw higher current,	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						rectification		this may trip the aircraft breaker	
59	CR203	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and C will draw higher current, this may trip the aircraft breaker	Marginal
60	CR204	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase C rectification	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
61	CR204	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
62	CR205	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Loss of 1/2 of phase C rectification	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
63	CR205	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Diode will burn open with excessive currents	Increased ripple on the C215	Phase A and B will draw higher current, this may trip the aircraft breaker	Marginal
64	CR216	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Main output rectifier is disable	Excessive noise on charger output	Charger may not operate, or will operate erratically	Marginal
65	CR216	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Excessive noise on charger output		Charger may not operate, or will operate erratically	Marginal
66	CR217	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	open	Main output rectifier is disable	Excessive noise on charger output	Charger may not operate, or will operate erratically	Marginal
67	CR217	1N5552, 600V, 5AMP,GLASS RECTI	Diode	1N5552	shorted	Excessive noise on charger output		Charger may not operate, or will operate erratically	Marginal
68	CR206	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
69	CR206	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
70	CR207	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the	Reduction in the 15V	Charger may not	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						24V	supply	operate	
71	CR207	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
72	CR208	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
73	CR208	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
74	CR209	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	open	Reduction in the 24V	Reduction in the 15V supply	Charger may not operate	Marginal
75	CR209	JANTX1N5614,1.0A,200V	Diode	JANTX1N5614	shorted	24V will oscillate	Oscillation in 15V supply	Charger may not operate	Marginal
76	CR400	1N5809,6 AMP, RECTIFIER	Diode	1N5809	open	FET Drive Signal Altered	Reduced VS bus I/V	Charger may not operate	Marginal
77	CR400	1N5809,6 AMP, RECTIFIER	Diode	1N5809	shorted	FET Drive Signal Altered	Dramatically Reduced VS bus I/V	Charger may not operate	Marginal
78	CR405	1N5809,6 AMP, RECTIFIER	Diode	1N5809	open	FET Drive Signal Altered	Reduced VS bus I/V	Charger may not operate	Marginal
79	CR405	1N5809,6 AMP, RECTIFIER	Diode	1N5809	shorted	FET Drive Signal Altered	Dramatically Reduced VS bus I/V	Charger may not operate	Marginal
80	CR402	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
81	CR401	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
82	CR404	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
83	CR403	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Current mode of charger is altered	Charger may operate at a higher then normal current	Charger will be overstressed and may fail to operate	Marginal
84	CR218	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
85	CR218	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
86	CR219	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								operate erratically	
87	CR219	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
88	CR220	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
89	CR220	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
90	CR221	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	open	Mosfet driver will not receive signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
91	CR221	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Mosfet driver will receive altered signal	Charger will operate erratically	Charger may not operate, or will operate erratically	Marginal
92	CR222	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Inhibit function disabled	Charger can not be shut off	Battery will be overcharged	Marginal
93	CR222	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Excessive current into opamp U205	Charger can not be shut off	Battery will be overcharged	Marginal
94	CR309	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Direct current path into U301	Will disable open sensor fault	Battery will be overcharged	Marginal
95	CR312	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	U301 output will not register the fault	Open sensor fault will not work	Battery will be overcharged	Marginal
96	CR312	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Possible high current input into U301	Hot battery fault may not work	Battery will be overcharged	Marginal
97	CR314	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Clock will not stop counting	Unit will return to topping mode after it should have shut off	Battery will be overcharged	Marginal
98	CR314	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Clock will not function correctly	Unit will remain in topping mode	Battery will be overcharged	Marginal
99	CR315	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Will prevent topping mode timer from disabling the charger	Charger will remain in main mode	Battery will be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
100	CR315	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the timer circuit, may damage U305		Charger will remain in main mode charge during a faulted condition, battery will be overcharged	Marginal
101	CR313	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Clock on U306 will not be disabled	battery tap fault will become intermittent	Battery may be overcharged	Marginal
102	CR313	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Clock on U306 may not operate correctly	3 minute timer on battery tap fault circuit may not operate correctly	Battery may be overcharged	Marginal
103	CR235	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hysteresis for U205 is inoperative	Oscillations in battery tap circuit	Battery tap circuit will fail, battery may be overcharged	Marginal
104	CR235	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Hysteresis for U205 is shifted or inoperative	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
105	CR236	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	High cell imbalance will not work	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
106	CR236	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the U205, may damage IC		Battery tap circuit will fail, battery may be overcharged	Marginal
107	CR237	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hysteresis for U205 is inoperative	Oscillations in battery tap circuit	Battery tap circuit will fail, battery may be overcharged	Marginal
108	CR237	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Hysteresis for U205 is shifted or inoperative	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
109	CR238	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Low cell imbalance will not work	Tap circuit will not function correctly	Battery tap circuit will fail, battery may be overcharged	Marginal
110	CR238	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	High current path into the U205, may damage IC		Battery tap circuit will fail, battery may be overcharged	Marginal
111	CR303	FJT1100	Diode	FJT1100	open	The heater blanket may be	Heater blanket will cause false delta T,	Battery will be undercharged, or	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						on when the charger is in main mode	causing premature switch to topping	aircraft breaker may trip	
112	CR302	FJT1100	Diode	FJT1100	open	Will prevent U302 from latching on delta T	May cause charger to return to main mode charge	Battery will be overcharged	Marginal
113	CR300	FJT1100	Diode	FJT1100	shorted	Delta T circuit will not work	Charger will remain in main mode	Battery may be overcharged	Marginal
114	CR301	FJT1100	Diode	FJT1100	shorted	Delta T circuit will not work	Charger will remain in main mode	Battery may be overcharged	Marginal
115	J1	D38999-20WD15PN, CONNECTOR, CI	Connector	D38999-20WD15PN	open	No input power		Charger will not operate	Marginal
116	J1	D38999-20WD15PN, CONNECTOR, CI	Connector	D38999-20WD15PN	shorted	Connector will burn itself open		Charger will not operate, aircraft breaker will trip	Marginal
117	J103	WTB20SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB20SAD9SY342	open	No input power		Charger will not operate	Marginal
118	J103	WTB20SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB20SAD9SY342	shorted	Connector will burn itself open		Charger will not operate, aircraft breaker will trip	Marginal
119	J104	WTB24SAD9SY342, STRAIGHT CONNECTOR	Connector	WTB24SAD9SY342	open	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
120	J104	WTB24SAD9SY342, STRAIGHT CONE	Connector	WTB24SAD9SY342	shorted	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
121	J2	D38999-20WD97PN, CONNECTOR, CI	Connector	D38999-20WD97PN	open	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
122	J2	D38999-20WD97PN, CONNECTOR, CI	Connector	D38999-20WD97PN	shorted	No battery temp signals		Charger will not operate, charger will register a fault	Marginal
123	J205	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Mosfet drivers are disabled		Charger will not operate	Marginal
124	J205	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
125	J206	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Main transformer is disabled		Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
126	J206	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Main transformer is shorted		Charger will not operate, aircraft breaker will trip	Marginal
127	J207	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	open	Mosfet drivers are disabled		Charger will not operate	Marginal
128	J207	WT4SAD9, 4 POSITION RECEPTACLE	Connector	WT4SAD9	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
129	L100	335BC105-1, COMMON MODE CHOKE	Inductor	335BC105-1	open	Lose of Phase A, B or C	Increased current on remaining phases	Blow aircraft breaker	Marginal
130	L100	335BC105-1, COMMON MODE CHOKE	Inductor	335BC105-1	shorted	Unbalanced Input V, excessive currents		Blow aircraft breaker	Marginal
131	L101	335BC108-1, INDUCTOR ASSEMBLY	Inductor	335BC108-1	open	Lose of Phase A, B or C	Increased current on remaining phases	Blow aircraft breaker	Marginal
132	L101	335BC108-1, INDUCTOR ASSEMBLY	Inductor	335BC108-1	shorted	Unbalanced Input V, excessive currents		Blow aircraft breaker	Marginal
133	L201	235BC103-1, INDUCTOR	Inductor	235BC103-1	open	Loss of DC buss voltage		Charger will not operate	Marginal
134	L202	235BC103-1, INDUCTOR	Inductor	235BC103-1	open	Loss of DC buss voltage		Charger will not operate	Marginal
135	L203	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	open	No charger output		Charger will not operate	Marginal
136	L204	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	open	No charger output		Charger will not operate	Marginal
137	L205	335BC107-1, INDUCTOR ASSEMBLY	Inductor	335BC107-1	open	No charger output		Charger will not operate	Marginal
138	P203	WTB20PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	open	Battery tap is missing	Tap circuit will register a fault	Charger will shut down based on the tap fault	Marginal
139	P203	WTB20PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	shorted	Several signal are shorted together		Charger will not operate	Marginal
140	P204	WTB24PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	open	Charger output is open		Charger will not operate	Marginal
141	P204	WTB24PR9ST342, RIGHT ANGLE CON	Connector	WTB20PR9SY342	shorted	Charger output is shorted		Charger will not operate, aircraft breaker will trip	Marginal
142	P205	WT4PRD8, 4 POSITION RIGHT	Connector	WT4PRD8-Top	open	Mosfet drivers		Charger will not	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
		ANGLE				are disabled		operate	
143	P205	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
144	P206	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	open	Main transformer is disabled		Charger will not operate	Marginal
145	P206	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Main transformer is shorted		Charger will not operate, aircraft breaker will trip	Marginal
146	P207	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	open	Mosfet drivers are disabled		Charger will not operate	Marginal
147	P207	WT4PRD8, 4 POSITION RIGHT ANGLE	Connector	WT4PRD8-Top	shorted	Mosfet drivers are disabled		Charger will not operate	Marginal
148	Q400	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Bus connection	Reduced Bridge bus I/V	Charger will not operate	Marginal
149	Q400	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bus connected to CS XFMR	Overvoltage/Current on Bridge Bus	Charger will not operate	Marginal
150	Q401	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Ground connection	Overvoltage on Bridge Bus	Charger will not operate	Marginal
151	Q401	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bridge Bus Grounded	Low voltage/High I on Bridge Bus	Charger will not operate	Marginal
152	Q402	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Bus connection	Reduced VS bus I/V	Charger will not operate	Marginal
153	Q402	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bus connected to Power XFMR	Overvoltage/Current on VS Bus	Charger will not operate	Marginal
154	Q403	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	openD	No Bridge to Ground connection	Overvoltage on VS Bus	Charger will not operate	Marginal
155	Q403	IRF450, HEXFET TRANSISTOR	Transistor	IRF450	shortedVDS	Bridge Bus Grounded	Low voltage/High I on Bridge Bus	Charger will not operate	Marginal
156	Q202	2N2907AJANTX,TRANS,PNP,60VCE	Transistor	2N2907AJTX	open	Main/topping mode is disabled		Battery may be overcharged	Marginal
157	Q202	2N2907AJANTX,TRANS,PNP,60VCE	Transistor	2N2907AJTX	shorted	Main/topping mode is disabled		Battery may be overcharged	Marginal
158	R214	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	15V goes to 24V (Vin)		Charger PWM may be overstressed, charger may not operate	Marginal
159	R358	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	2nd thermister		back up heater	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						will lose bias		circuit will not function	
160	R400	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
161	R401	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
162	R403	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
163	R404	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	FET off	Reduced VS bus V	Charger will not operate	Marginal
164	R238	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
165	R213	RLR07C2490FS,249ohm,1%,1/4W (S	Resistor	RLR07C2490FS	open	Loss of 15V, 15V drops below 2V		Charger will not operate	Marginal
166	R332	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Hot battery shut down feedback voltage loss	Charger will shut off on false hot battery	Charger is disabled	Marginal
167	R217	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of control of the voltage of U202	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
168	R242	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of reference on U205 Input	Inhibit function will always be on	Charger will not operate	Marginal
169	R243	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of inhibit signal		Battery may be overcharged	Marginal
170	R314	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Temp sensor loses bias	False hot battery fault	Charger is disabled	Marginal
171	R319	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Heater control reference loss	Battery heater blanket never comes on	Charger may not operate under cold conditions	Marginal
172	R320	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Hot battery shut down reference loss	Charger shuts off on false hot battery	Charger is disabled	Marginal
173	R323	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Cold battery shut down reference loss	Charger does not shut off on cold battery	Battery may be overcharged under cold conditions	Marginal
174	R324	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Hot battery fault reference loss	No hot battery fault	Battery may be overcharged under hot conditions	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
175	R327	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Open sensor reference loss	No open sensor fault	Battery will be overcharged	Marginal
176	R317	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Floating input to op-amp	Never terminating main mode charge	Battery will be overcharged	Marginal
177	R328	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of temp sensor input to delta Temp circuit	Never terminating main mode charge	Battery will be overcharged	Marginal
178	R218	RNC55H9091FS 9.09K 1% 1/8W (S)	Resistor	RNC55H9091FS	open	U202 anode floating	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
179	R219	RNC55H9091FS 9.09K 1% 1/8W (S)	Resistor	RNC55H9091FS	open	Reduces the 12V supplied to N+ on U203	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
180	R220	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of the 12V supplied to U203	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
181	R221	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Q202 will lose base drive	Current limit circuit will operate erratically	Battery may be overcharged	Marginal
182	R228	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	VREF output of the PWM is lost	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
183	R233	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	PWM Feedback compensation circuit is disabled	Charger will operate erratically	Charger may not operate, or may be overstressed	Marginal
184	R237	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
185	R239	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Mosfet driver signal is altered		Charger may not operate	Marginal
186	R331	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to hot battery shut down	Charger will not turn off on hot battery	Battery may be overcharged under hot conditions	Marginal
187	R333	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to cold battery shut down	Charger will not turn off on cold battery	Battery may be overcharged under cold conditions	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
188	R336	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to hot battery fault	No hot battery fault	Battery may be overcharged under hot conditions	Marginal
189	R347	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	U305 will lose input trigger (reset)	Charger will not operate in topping mode	Battery will be overcharged	Marginal
190	R222	RLR07C1693FS,169K,1%,1/4W (S)	Resistor	RLR07C1693FS	open	PWM will lose part of the reference	Charger may operate at higher then normal voltages	Battery may be overcharged	Marginal
191	R330	RLR07C1693FS,169K,1%,1/4W (S)	Resistor	RLR07C1693FS	open	Heater control feedback voltage loss	Battery heater will stay on	Battery may be heated extremely high by the heater blanked	Marginal
192	R402	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased base drive current for Q202	Reduced charger output current	Charger will not operate, or operate at a lower current	Marginal
193	R232	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	PWM Feedback compensation circuit is disabled	Charger will operate erratically	Charger may not operate, or may be overstressed	Marginal
194	R312	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Open sensor	False open sensor fault	Charger is disabled	Marginal
195	R329	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Loss of temp sensor input to heater control	Battery heater will never turn on	Battery may never charge under cold conditions	Marginal
196	R359	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	2nd thermister will lose bias		back up heater circuit will not function	Marginal
197	R231	RNC55H5112FS 51.1K 1% 1/8W (S)	Resistor	RNC55H5112FS	open	PWM Feedback compensation circuit is disabled	Charger will operate erratically	Charger may not operate, or may be overstressed	Marginal
198	R236	RLR07C2212FS,22.1K,1%,1/4W (S)	Resistor	RLR07C2212FS	open	Loss of PWM u203 switching	Loss of Power transformer output	Charger will not operate	Marginal
199	R244	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Loss of inhibit bias	Inhibit function may not work	Battery may be overcharged	Marginal
200	R334	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Cold battery shut down feedback voltage loss	Charger will shut off on false cold battery	Charger is disabled	Marginal
201	R341	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	U301B will lose a	Battery heater	Battery may be	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						reference	blanket over temp fault is inoperative	excessively heated by the heater blanket	
202	R308	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Clock on U306 will not operate	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal
203	R248	RJR24CW103R,VAR.-RES.,10K,10%,	Resistor	RJR24CW103R	open	Loss of U202 Ref control	Charger may go to a higher then normal voltage	Battery may be overcharged	Marginal
204	R316	RLR07C4640FS 464ohm 1% 1/4W (S	Resistor	RLR07C4640FS	open	Open sensor	False open sensor fault	Charger is disabled	Marginal
205	R315	RLR07C4223FS 422K 1% 1/4W (S)	Resistor	RLR07C4223FS	open	Shifted sensor voltage - colder	False charger temperature functions	Charger will not operate correctly	Marginal
206	R321	RLR07C3832FS 38.3K 1% 1/4W (S)	Resistor	RLR07C3832FS	open	Hot battery shut down reference loss	Charger does not shut off on hot battery	Battery may be overcharged	Marginal
207	R322	RNC55H2742FS 27.4K 1% 1/8W (S)	Resistor	RNC55H2742FS	open	Cold battery shut down reference loss	Charger shuts off on false cold battery	Charger is disabled	Marginal
208	R325	RNC55H1742FS 17.4K 1% 1/8W (S)	Resistor	RNC55H1742FS	open	Hot battery fault reference loss	False hot battery fault	Charger is disabled	Marginal
209	R326	RNC55H2612FS 26.1K 1% 1/8W (S)	Resistor	RNC55H2612FS	open	Open sensor reference loss	False open sensor fault	Charger is disabled	Marginal
210	R351	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U305 will lose clock source	Charger will not come out of topping mode	Battery will be overcharged	Marginal
211	R346	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U306 clock reference	Battery tap fault timer may not function, inoperative battery tap fault	Battery may be overcharged	Marginal
212	R297	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U205B tap fault will not latch	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal
213	R298	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	U205B tap fault will not latch	Battery tap fault will not register, charger	Battery may be overcharged	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
							will not shut off on fault		
214	R352	RLR07C6813FS 681K 1% 1/4W (S)	Resistor	RLR07C6813FS	open	U305 will lose clock source	Charger will not come out of topping mode	Battery will be overcharged	Marginal
215	R348	RLR07C2552FS,25.5K,1%,1/4W (S)	Resistor	RLR07C2552FS	open	Q202 will lose base drive	Charger will not come out of main mode	Battery will be overcharged	Marginal
216	R296	RLR07C1005GR,10Meg,2%,1/4W (R)	Resistor	RLR07C1005GR	open	U306 tap fault timer will not be triggered	Battery tap fault will not register, charger will not shut off on fault	Battery may be overcharged	Marginal
217	R300	RNC55H3652FS 36.5K 1% 1/8W (S)	Resistor	RNC55H3652FS	open	2nd thermister will lose bias		back up heater circuit will not function	Marginal
218	T200	1.5R18CT,115VAC, 400Hz, 1 PHASE	Transformer	1.5R18CT	open	Loss of bias voltages		Charger will not operate	Marginal
219	T200	1.5R18CT,115VAC, 400Hz, 1 PHASE	Transformer	1.5R18CT	shorted	Loss of bias voltages, transformer may burn open		Charger will not operate	Marginal
220	T400	335BC109-1, CURRENT SENSE TRAN	Transformer	335BC109-1	open	Loss of current feedback voltage	Charger may operate at higher then normal currents	Aircraft breakers may trip	Marginal
221	T400	335BC109-1, CURRENT SENSE TRAN	Transformer	335BC109-1	shorted	Loss of current feedback voltage	Charger may operate at higher then normal currents	Aircraft breakers may trip	Marginal
222	T202	335BC115-1, PLANNAR TRANSFORMER	Transformer	335BC115-1	open	Loss of main output current		Charger will not operate	Marginal
223	T202	335BC115-1, PLANNAR TRANSFORMER	Transformer	335BC115-1	shorted	Excessive current in T202		Aircraft breakers may trip	Marginal
224	T203	335BC116-1, CURRENT SENSE TRAN	Transformer	335BC116-1	open	Loss of gate driver signal		Charger will not operate	Marginal
225	T203	335BC116-1, CURRENT SENSE TRAN	Transformer	335BC116-1	shorted	Loss of gate driver signal		Charger will not operate	Marginal
226	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Hi	Bottom FET On	Q401 will self destruct due to excessive currents	Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
227	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Hi	Top FET On	Q400 will self destruct due to excessive currents	Charger will not operate	Marginal
228	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Hi	Bottom FET On	Q403 will self destruct due to excessive currents	Charger will not operate	Marginal
229	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Hi	Top FET On	Q402 will self destruct due to excessive currents	Charger will not operate	Marginal
230	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Lo	Bottom FET Off		Charger will not operate	Marginal
231	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Lo	Top FET Off		Charger will not operate	Marginal
232	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Lo	Bridge Bus Grounded		Charger will not operate	Marginal
233	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	LO Lo	Bottom FET Off		Charger will not operate	Marginal
234	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	HO Lo	Top FET Off		Charger will not operate	Marginal
235	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Lo	Bridge Bus Grounded		Charger will not operate	Marginal
236	U203	UC1846,Current Mode PWM Controller	Controller	UC1846	high	Mosfet Drivers will not function		Charger will not operate	Marginal
237	U203	UC1846,Current Mode PWM Controller	Controller	UC1846	low	Mosfet Drivers will not function		Charger will not operate	Marginal
238	U205	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Cold battery shut down will be enabled	Charger will shut down	Charger will not operate	Marginal
239	U205	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Hot battery shut down will be enabled	Charger will shut down	Charger will not operate	Marginal
240	U300	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal
241	U300	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal
242	U301	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	high	Battery faults will be enabled	Charger will shut down	Charger will not operate	Marginal

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
243	U301	LT1014MJ,LINEAR,QUAD,OP-AMP	Op-Amp	LT1014MJ	low	Battery hot and open sensor faults will not be enabled	Charger will not shut down on these faults	Battery may be overcharged	Marginal
244	U306	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	low	Charger will never register a cell imbalance		Battery may be overcharged	Marginal
245	U303	M38510/05553, BUFFER/CONVERTER	Converter	M38510/05553	low	unable to register a hot battery fault		Battery may be overcharged	Marginal
246	U304	REF01,10V-PRECISION-REF	voltage ref	REF01	high	Reference is in an overvoltage condition	All temp circuitry will not function correctly	Erratic charger behavior	Marginal
247	U213	LM117H,VOLTAGE-REGULATOR,TO-39	Regulator	LM117H	high	15V Over voltage		Erratic charger behavior	Marginal
248	U213	LM117H,VOLTAGE-REGULATOR,TO-39	Regulator	LM117H	low	Loss of 15V		Charger will not operate	Marginal
249	U302	AD712, DUAL-PRECISION, HIGH SP	Op-Amp	AD712	high	Charger will never register a delta T condition	Charger will remain in main topping mode	Battery will be overcharged	Marginal
250	C100	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
251	C100	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
252	C101	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
253	C101	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
254	C102	235BC831,2200pf,1000V	Capacitor	235BC831-1B	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
255	C102	235BC831,2200pf,1000V	Capacitor	235BC831-1B	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
256	C103	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
257	C103	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
258	C104	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
259	C104	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
260	C105	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
261	C105	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
262	C106	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
263	C106	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
264	C107	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
265	C107	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
266	C108	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
267	C108	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
268	C109	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
269	C109	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
270	C110	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
271	C110	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
272	C111	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
273	C111	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
274	C112	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
275	C112	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
276	C113	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
277	C113	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
278	C114	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
279	C114	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
280	C115	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
281	C115	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
282	C116	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
283	C116	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
284	C117	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increase in EMI	Mil-Std 461	Increased EMI	Minor
285	C117	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increase in EMI	Mil-Std 461	Increased EMI	Minor
286	C209	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
287	C209	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Loss of EMI Filtering	Will put excessive power in R104, R104 will burn open	Loss of EMI Filtering	Minor
288	C214	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased EMI		Increased EMI	Minor
289	C214	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Increased EMI		Increased EMI	Minor
290	C240	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on the low battery fault line		False low battery fault flickering	Minor
291	C240	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Low battery fault always on		Low battery fault always on	Minor
292	C250	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on fault line		Possible false triggering of the fault indicator	Minor
293	C250	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Gate of Q300 shorted to ground		All fault signals will be disabled	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
294	C257	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on the drain of Q300	Increased noise on the fault output	Possible false triggering of the fault indicator	Minor
295	C257	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	drain of Q300 grounded		Fault output will always register a fault	Minor
296	C259	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Increased noise on Battery tap fault output	False triggering of the fault output	Possible false triggering of the fault indicator	Minor
297	C259	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	shorted	Battery tap fault output shorted to ground		Battery tap fault will not register	Minor
298	C268	M39014/02-1310,.1uf,100V,10%	Capacitor	M39014/02-1310	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
299	C118	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
300	C118	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI Filtering	Excessive power in R100,R100 will open	Loss of EMI Filtering, Increased EMI	Minor
301	C119	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
302	C119	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI Filtering	Excessive power in R101,R101 will open	Loss of EMI Filtering, Increased EMI	Minor
303	C120	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
304	C120	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of EMI Filtering	Excessive power in R102, R102 will open	Loss of EMI Filtering, Increased EMI	Minor
305	C207	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
306	C208	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
307	C208	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	shorted	Loss of Phase C, phase C is shorted to the chassis		Loss of Phase C, aircraft circuit breaker will trip	Minor
308	C266	CK61AW222M,2200pf,500V,20%	Capacitor	CK61AW222M	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
309	C203	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Loss of EMI Filtering		Loss of EMI Filtering, Increased EMI	Minor
310	C203	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Loss of EMI Filtering	Will put excessive power in R103, R103 will burn open	Loss of EMI Filtering, Increased EMI	Minor
311	C256	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Increase Noise on input of U301B		Possible false heater blanket fault	Minor
312	C256	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Reference on U301B input is grounded		False heater blanket over temp fault	Minor
313	C260	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	open	Battery tap fault timer may not work correctly		Battery tap fault output may not register the failure	Minor
314	C260	M39014/01-1317,1000pf,200V,10%	Capacitor	M39014/01-1317	shorted	Battery tap fault timer may not work correctly		Battery tap fault output may not register the failure	Minor
315	C204	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering A-B		Reduced EMI filtering A-B, Increased EMI	Minor
316	C204	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering A-B	Will put excessive power in R204, R204 will burn open	Reduced EMI filtering A-B, Increased EMI	Minor
317	C205	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering B-C		Reduced EMI filtering B-C, Increased EMI	Minor
318	C205	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering B-C	Will put excessive power in R205, R205 will burn open	Reduced EMI filtering B-C, Increased EMI	Minor
319	C206	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	open	Reduced EMI filtering A-C		Reduced EMI filtering A-C,	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								Increased EMI	
320	C206	235BC815,.1uf, 600V,20%	Capacitor	235BC815-1B	shorted	Reduced EMI filtering A-C	Will put excessive power in R206, R206 will burn open	Reduced EMI filtering A-C, Increased EMI	Minor
321	C210	CFR06RNE473KP, .047uF, 400V, 1	Capacitor	CFR06RNE473KP	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
322	C210	CFR06RNE473KP, .047uF, 400V, 1	Capacitor	CFR06RNE473KP	shorted	Loss of EMI Filtering	capacitor would quickly burn open	Loss of EMI Filtering	Minor
323	C217	CFR06RNE473KP, .047uF, 400V, 2	Capacitor	CFR06RNE473KP	open	Loss of Bus voltage filtering		Increased EMI	Minor
324	C217	CFR06RNE473KP, .047uF, 400V, 2	Capacitor	CFR06RNE473KP	shorted	Bus shorted to chassis		Increased EMI	Minor
325	C218	CFR06RNE473KP, .047uF, 400V, 3	Capacitor	CFR06RNE473KP	open	Loss of Bus voltage filtering		Increased EMI	Minor
326	C218	CFR06RNE473KP, .047uF, 400V, 3	Capacitor	CFR06RNE473KP	shorted	Bus shorted to chassis		Increased EMI	Minor
327	C211	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Reduced 24V Filtering		Reduced 15V stability	Minor
328	C222	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Current limit reference is shifted		Peak charging current limit is shifted	Minor
329	C234	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	open	Increased EMI on charger output		Increased EMI on charger output	Minor
330	C234	235BC834-1-, 68uF, 60V, 10%	Capacitor	235BC834-1-	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
331	C212	235BC833-1-, 150uF, 35V, 20%	Capacitor	235BC833-1-	open	Reduced 12V Filtering		Reduced 12V Filtering	Minor
332	C213	CKR05BX471KR,470pF,10%,200V,(R	Capacitor	CKR05BX471KR	open	Reduced 15V stability		Reduced 15V stability	Minor
333	C219	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	open	Reduced 15V stability		Reduced 15V stability	Minor
334	C311	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	open	Increased noise on fault line		Possible false triggering of the fault indicator	Minor
335	C311	M39014/02-1320,.47uf,50V,10%	Capacitor	M39014/02-1320	shorted	Gate of Q300 shorted to ground		All fault signals will be disabled	Minor
336	C401	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	FET Drive Signal	Reduced VS bus I/V	reduced charger	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						Altered		efficiency	
337	C402	CKR06BX473KM,.047uF,10%,100V,(	Capacitor	CKR06BX473KM	open	FET Drive Signal Altered	Reduced VS bus I/V	reduced charger efficiency	Minor
338	C221	M39014/01-1522,.0018uf,100V,10	Capacitor	M39014/01-1522	open	Increased noise on reference		Increased noise on charger output	Minor
339	C229	M39014/01-1529,4700pf,100V,10%	Capacitor	M39014/01-1529	open	Increased noise on charger output		Increased EMI on charger output	Minor
340	C229	M39014/01-1529,4700pf,100V,10%	Capacitor	M39014/01-1529	shorted	Increased noise on charger output		Increased EMI on charger output	Minor
341	C230	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	open	Increased EMI on charger output		Increased EMI on charger output	Minor
342	C231	235BC835-1, 1200uF, 50V, 10%	Capacitor	235BC835-1	open	Increased EMI on charger output		Increased EMI on charger output	Minor
343	C232	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
344	C233	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
345	C233	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
346	C235	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
347	C235	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
348	C236	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased EMI on charger output		Increased EMI on charger output	Minor
349	C236	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
350	C302	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
351	C302	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Shifted sensor voltage	Higher temp then actual	False Hot battery fault	Minor
352	C303	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
353	C303	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Shorted temp sensor	False Hot battery fault	False Hot battery fault	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
354	C310	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased Noise on VCC		Possible premature switch into topping mode	Minor
355	C324	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on U301C		Possible false battery heater blanket over temp fault	Minor
356	C324	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	U301C shorted to ground		Heater blanket over temp will never turn on	Minor
357	C267	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Increased noise on the battery heater blanket output	Resister R251 will burn open	Increased EMI on the heater blanket output	Minor
358	C267	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	shorted	Resister R251 will burn open	Increased noise on the battery heater blanket output	Increased EMI on the heater blanket output	Minor
359	C305	M39014/02-1415,1uf,50V,10%	Capacitor	M39014/02-1415	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
360	C237	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased EMI on charger output		Increased EMI on charger output	Minor
361	C237	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
362	C238	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased EMI on charger output		Increased EMI on charger output	Minor
363	C238	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Increased EMI on charger output	Capacitor will quickly burn open	Increased EMI on charger output	Minor
364	C300	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
365	C300	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Shorted temp sensor	False Hot battery fault	False Hot battery fault	Minor
366	C301	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on Temp Sensor Voltage	False charger temperature functions	Charger may end main charge mode prematurely	Minor
367	C301	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Shorted temp sensor	False Hot battery fault	False Hot battery fault	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
368	C322	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Battery tap fault timer will not work correctly		Battery tap fault output will not register the failure	Minor
369	C322	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	Battery tap fault timer will not work correctly		Battery tap fault output will not register the failure	Minor
370	C326	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on U301C		Possible false battery heater blanket over temp fault	Minor
371	C326	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	U301C shorted to ground		Heater blanket over temp will never turn on	Minor
372	C325	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	open	Increased noise on U301C		Possible false battery heater blanket overtemp fault	Minor
373	C325	M39014/01-1535,.01uf,100V,10%	Capacitor	M39014/01-1535	shorted	U301C shorted to ground		Heater blanket over temp will never turn on	Minor
374	C253	CKR06BX105KR,1uF,10%,50V,(R)	Capacitor	CKR06BX105KR	open	Increased noise on charger output		Increased EMI on charger output	Minor
375	C253	CKR06BX105KR,1uF,10%,50V,(R)	Capacitor	CKR06BX105KR	shorted	Increased noise on charger output		Increased EMI on charger output	Minor
376	C318	M39014/01-1523,2200pf,100V,10%	Capacitor	M39014/01-1523	open	Increase Noise on gate of Q301		Possible heater blanket oscillations	Minor
377	C318	M39014/01-1523,2200pf,100V,10%	Capacitor	M39014/01-1523	shorted	Gate of Q301 shorted to ground		Heater blanket will never turn on	Minor
378	C306	M39014/01-1293,47pf,200V,10%	Capacitor	M39014/01-1293	open	Noise will get into the temp circuit		May come out of main mode charge prematurely	Minor
379	CR402	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
380	CR401	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
381	CR404	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple		Charger may fail to	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						on the current limit circuit		operate at the correct current	
382	CR403	1N6642,300ma, 2.5A, SWITCHING	Diode	1N6642	shorted	Excessive ripple on the current limit circuit		Charger may fail to operate at the correct current	Minor
383	CR305	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Not path for U300 output	Cold battery shut down will not work	Battery will be overcharged at cold temperatures	Minor
384	CR305	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Direct current path into U300	Will disable hot battery shut down	Battery will be overcharged at high temperatures	Minor
385	CR304	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	No path for U303 output	Hot battery shut down will not work	Battery will be overcharged at high temperatures	Minor
386	CR304	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Possible high current input for U303	Will disable cold battery shut down	Battery will be overcharged at cold temperatures	Minor
387	CR308	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hot and open sensor fault will not shut down unit		Hot and open sensor fault will not shut down unit	Minor
388	CR308	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Will disable hot and cold battery shut down		Hot and open sensor fault will not shut down unit	Minor
389	CR309	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Signal out of U301 will be disabled		Hot battery fault will not work	Minor
390	CR310	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Hot bat fault, open sensor fault, and tap fault are disabled		Hot bat fault, open sensor fault, and tap fault are disabled	Minor
391	CR310	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	Diode steering of fault outputs disabled	High current path into U301	Faults will not register	Minor
392	CR311	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	open	Output of U302 disabled		Battery tap fault circuit will not work, battery will be charged in a faulted	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								condition	
393	CR311	JANTX1N4148-1,.2A,100V-DIODE	Diode	JANTX1N4148-1	shorted	U306 input is now a high current path into the IC		Battery tap fault circuit will not work, battery will be charged in a faulted condition	Minor
394	CR303	FJT1100	Diode	FJT1100	shorted	Additional current will leak into delta T circuit causing false triggering	Premature switching to topping mode	Battery will be undercharged	Minor
395	CR302	FJT1100	Diode	FJT1100	shorted	Will push U302A input pin high, causing premature delta T	Cause charger to exit main mode prematurely	Battery will be undercharged	Minor
396	CR300	FJT1100	Diode	FJT1100	open	C271 will not be able to discharge on power down		Charger may register a false delta Temp when power cycling, battery may be undercharged	Minor
397	CR301	FJT1100	Diode	FJT1100	open	C271 will not have bulk charge	Charger may terminate main mode prematurely	Battery may be undercharged	Minor
398	L201	235BC103-1, INDUCTOR	Inductor	235BC103-1	shorted	Increased EMI on DC buss		Increased EMI on the charger output and input power cables	Minor
399	L202	235BC103-1, INDUCTOR	Inductor	235BC103-1	shorted	Increased EMI on DC buss		Increased EMI on the charger output and input power cables	Minor
400	L203	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	shorted	Increased EMI on the charger output		Increased EMI on the charger output	Minor
401	L204	335BC106-1, INDUCTOR ASSEMBLY	Inductor	335BC106-1	shorted	Increased EMI on the charger output		Increased EMI on the charger output	Minor
402	L205	335BC107-1, INDUCTOR ASSEMBLY	Inductor	335BC107-1	shorted	Increased EMI on		Increased EMI on	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
						the charger output		the charger output	
403	L206	BEAD, FERRITE, FAIRITE, 267301	Inductor	2673015301	open	Heater blanket will not work		Charger will remain in cold hold off mode and never charge the battery	Minor
404	L206	BEAD, FERRITE, FAIRITE, 267301	Inductor	2673015301	shorted	Increased noise on heater blanket circuit		Increased noise on heater blanket circuit	Minor
405	Q205	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	open	Low battery fault always off		Low battery fault will not register	Minor
406	Q205	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	shorted	Low battery fault always on		Low battery fault always on	Minor
407	Q300	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	open	Fault output will never register		A fault condition will never be known	Minor
408	Q300	2N6788JANTX,POWER-MOSFET	MOSFET	2N6788JTX	shorted	Fault output is always on		Fault output is always on	Minor
409	Q301	2N6764JANTX,POWER-MOSFET,N-CHA	MOSFET	2N6764JTX	open	Heater blanket will not work	Battery will never increase in temperature	Charger will never charge the battery, a low battery fault will occur, only under cold conditions	Minor
410	Q301	2N6764JANTX,POWER-MOSFET,N-CHA	MOSFET	2N6764JTX	shorted	Heater blanket always on	Battery will over temp	Charger will turn off, a fault will register	Minor
411	R100	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
412	R101	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
413	R102	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
414	R240	RLR07C1780FS,178ohm,1%,1/4W (S	Resistor	RLR07C1780FS	open	Loss of EMI filtering on charger output		Increased EMI on charger output	Minor
415	R313	RLR07C2741FS 2.74K 1% 1/4W (S)	Resistor	RLR07C2741FS	open	Open sensor	False open sensor fault	Charger will turn off, a fault will register	Minor
416	R103	RLR07C2870FS 287ohm 1% 1/4W (S	Resistor	RLR07C2870FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
417	R204	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering A-B		Reduced EMI filtering A-B	Minor
418	R205	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering B-C		Reduced EMI filtering B-C	Minor
419	R206	RLR20C1210FS 121ohm 1% 1/2W (S	Resistor	RLR20C1210FS	open	Reduced EMI filtering A-C		Reduced EMI filtering A-C	Minor
420	R104	RCR07C2R7JS,2.7ohm,5%,1/4W (S)	Resistor	RCR07G2R7JS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
421	R208	RWR81S1001FR 1K 0.1% 1W (R)	Resistor	RWR81S1001FR	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
422	R212	RWR81S1001FR 1K 0.1% 1W (R)	Resistor	RWR81S1001FR	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
423	R209	RWR80S4R99FS 4.99ohm 0.1% 2W (	Resistor	RWR80S4R99FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
424	R211	RWR80S4R99FS 4.99ohm 0.1% 2W (	Resistor	RWR80S4R99FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
425	R210	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
426	R251	RLR07C10R0FS,10ohm,1%,1/4W (S)	Resistor	RLR07C10R0FS	open	Current limit for C267	More noise on heater blanket, or coming in from heater blanket	Loss of EMI Filtering	Minor
427	R215	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
428	R216	RLR07C2613FS 261K 1% 1/4W (S)	Resistor	RLR07C2613FS	open	Loss of EMI Filtering		Loss of EMI Filtering	Minor
429	R339	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Inverter will not function	Charger may be on when battery heater is on, causing false DT	Battery may be undercharged during cold temperature operation	Minor
430	R343	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Inverter input loss U303B	Hot battery shut down will not function	Battery will be charged during hot conditions, reducing battery life	Minor
431	R344	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	U301 will not be able to output a fault signal		Back up heater turn off circuit will not be able to show a fault	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
432	R252	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
433	R255	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
434	R311	RLR07C1003FS,100K,1%,1/4W (S)	Resistor	RLR07C1003FS	open	Loss of temp sensor input to op-amp	False triggering of DT/DT circuit, no main mode charge function	Battery may be undercharged	Minor
435	R338	RLR07C1002FS,10K,1%,1/4W (S)	Resistor	RLR07C1002FS	open	Loss of temp sensor input to open sensor fault	No open sensor fault	Open sensor fault inoperative	Minor
436	R226	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
437	R227	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
438	R229	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Increased voltage on ILIM of PWM		Charger will operate at a higher then normal current	Minor
439	R230	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	Current limiting circuit is disabled		Charger will operate at a higher then normal current	Minor
440	R350	RLR07C1001FS,1K,1%,1/4W (S)	Resistor	RLR07C1001FS	open	U301 will lose a reference	Back up heater turn off will always show a fault	Fault indicator is always on	Minor
441	R241	RLR07C35R7FS 35.7ohm 1% 1/4W (	Resistor	RLR07C35R7FS	open	Loss of EMI filtering on charger output		Increased EMI on charger output	Minor
442	R245	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Low battery fault circuit is disabled		Low battery fault will not work	Minor
443	R246	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	Low battery fault will always be enabled		Low battery fault will always stay on	Minor
444	R349	RLR07C1004FS,1Meg,1%,1/4W (S)	Resistor	RLR07C1004FS	open	U301 will lose a reference	Back up heater turn off will not show a	Fault indicator is always on	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
							fault		
445	R247	RLR07C1000FS,100ohm,1%,1/4W (S	Resistor	RLR07C1000FS	open	Low battery fault disabled		Low battery fault will not register	Minor
446	R360	RLR07C1000FS,100ohm,1%,1/4W (S	Resistor	RLR07C1000FS	open	Battery fault indicator signal path opened	Battery fault indicator will not function	Fault indicator is always off	Minor
447	R318	RNC55H5902FS 59K 1% 1/8W (S)	Resistor	RNC55H5902FS	open	Heater control reference loss	Battery heater blanket stays on	Battery may be heated extremely high by the heater blanked	Minor
448	R335	RLR07C3483FS 348K 1% 1/4W (S)	Resistor	RLR07C3483FS	open	Loss of voltage shift on op-amp	Loss of hysteresis on hot bat fault indicator	Fault indicator may flicker	Minor
449	R356	RLR07C3483FS 348K 1% 1/4W (S)	Resistor	RLR07C3483FS	open	U301C feed back resister hysteresis		Back up heater turn off circuit may oscillate	Minor
450	R337	RLR07C4754FS 4.75Meg 1% 1/4W (	Resistor	RLR07C4754FS	open	Loss of voltage shift on op-amp	Loss of hysteresis on open sensor fault	Fault indicator may flicker	Minor
451	R340	RLR07C4752FS 47.5K 1% 1/4W (S)	Resistor	RLR07C4752FS	open	Mosfet 208 will not turn on	Battery heater will not function, charger may never operate	Charger will not operate at cold temperatures	Minor
452	R254	RLR07C4752FS 47.5K 1% 1/4W (S)	Resistor	RLR07C4752FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
453	R342	RLR07C4751FS 4.75K 1% 1/4W (S)	Resistor	RLR07C4751FS	open	U301B will lose a reference	Battery heater over temp fault will not work	Fault indicator is always on	Minor
454	R357	RLR07C4751FS 4.75K 1% 1/4W (S)	Resistor	RLR07C4751FS	open	U301C will lose a reference		Inoperative back up heater turn off circuit	Minor
455	R353	LVR2-0.01-3%,.01ohm,2W,3%	Resistor	LVR2-0.01-3%	open	U301 will lose a reference	Back up heater turn off will always show a fault	Fault indicator is always on	Minor
456	R345	RLR07C2003FS,200K,1%,1/4W (S)	Resistor	RLR07C2003FS	open	Q300 gate discharge path is lost	Q300 may not be able to turn off, Fault indicator always on	Fault indicator is always on	Minor
457	R354	RNC55H3832FS 38.3K 1% 1/8W (S)	Resistor	RNC55H3832FS	open	U301C will lose a reference		Inoperative back up heater turn off	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
								circuit	
458	R355	RNC55H1002FS 10K 1% 1/8W (S)	Resistor	RNC55H1002FS	open	U301C will lose a reference		Inoperative back up heater turn off circuit	Minor
459	R253	RNC55H1052FS 10.5K 1% 1/8W (S)	Resistor	RNC55H1052FS	open	Battery voltage on U205 will be lost	Battery tap circuit will register a false tap failure	Fault indicator is always on	Minor
460	R309	RLR07C5114FS 5.11Meg 1% 1/4W (	Resistor	RLR07C5114FS	open	Cap 271 not able to discharge	Loss of delta time circuit function for DT/DT circuit	Battery may be undercharged	Minor
461	R310	RLR07C1005FS,10Meg,1%,1/4W (S)	Resistor	RLR07C1005FS	open	Cap 271 not able to charge fully	Loss of delta time circuit function for DT/DT circuit	Battery may be undercharged	Minor
462	U400	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Hi	Bridge Bus Voltage Low	Q400, Q401 will see higher then normal currents	Charger may not operate at rated current	Minor
463	U401	HIGH AND LOW SIDE DRIVER	Driver	IR2110	VS Hi	Bridge Bus Voltage Low	Q402, Q403 will see higher then normal currents	Charger may not operate at rated current	Minor
464	U202	5962-8410901PX, ADJUSTABLE PRE	Driver	5962-8410901PX	short	Voltage reference into U203 is too low	Charger peak voltage is reduced	Charger may not charge battery correctly	Minor
465	U202	5962-8410901PX, ADJUSTABLE PRE	Driver	5962-8410901PX	open	Voltage reference into U203 is too high	Charger peak voltage is increased	Charger may not charge battery correctly	Minor
466	U305	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	high	False end to the topping mode	Charger will skip topping mode	Battery may be undercharged	Minor
467	U305	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	low	Charger will never complete topping mode		Battery may be undercharged	Minor
468	U306	MICROCIRCUIT,14-STAGE-TIMER,CD	Timer	CD4060BF	high	False output of battery cell imbalance		Fault indicator is always on	Minor
469	U303	M38510/05553, BUFFER/CONVERTER	Converter	M38510/05553	high	false hot battery fault		Fault indicator is always on	Minor
470	U304	REF01,10V-PRECISION-REF	voltage ref	REF01	low	All temp circuitry will be in a faulted condition		Fault indicator is always on	Minor

Record #	Ref. Des.	Description	Part Type	Part #	Failure Mode	Local Effect	Next Higher Effect	End Effect	Severity
471	U302	AD712, DUAL-PRECISION, HIGH SP	Op-Amp	AD712	low	Charger will always register a delta T condition	Charger will go directly to topping mode, skipping main mode	Battery may be undercharged	Minor

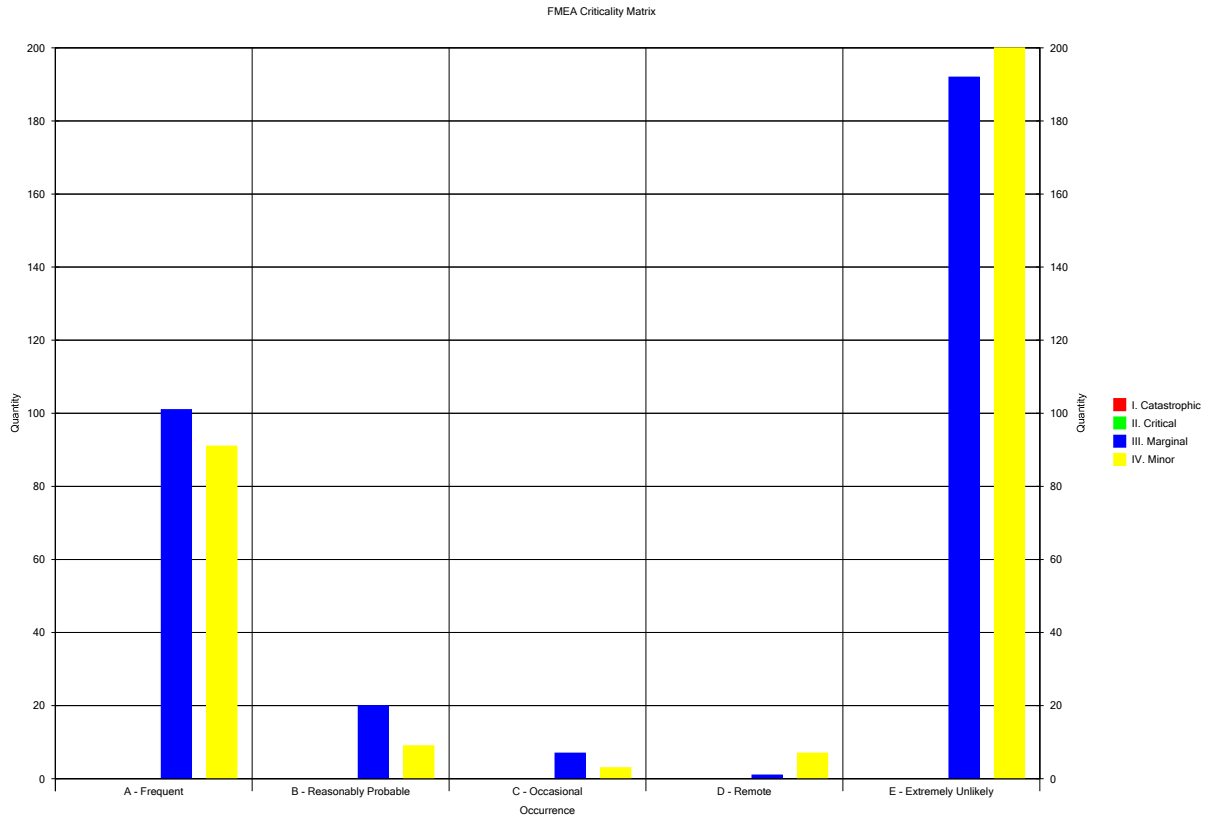

Figure 1.4-1: FMEA Mode Criticality Matrix. The specific failure modes are noted below and in FMECA_Criticality_Risks.xls.

Criticality Matrix

	I. Catastrophic	II. Critical	III. Marginal	IV. Minor
A. Frequent			6, 9, 340, 27, 342, 36, 39, 40, 42, 341, 51, 54, 61, 63, 66, 69, 70, 72, 73, 75, 328, 329, 81, 84, 87, 88, 90, 92, 94, 96, 110, 112, 114, 116, 296, 298, 300, 302, 354, 372, 378, 384, 387, 444, 461, 467, 470, 472, 473, 476, 478, 487, 490, 493, 496, 514, 526, 540, 541, 543, 544, 546, 547, 549, 550, 552, 553, 555, 556, 558, 559, 561, 562, 564, 565, 567, 568, 570, 571, 574, 577, 580, 595, 598, 601, 604, 607, 610, 613, 622, 634, 637, 639, 642, 645, 647, 653, 655, 657, 659, 661	337, 338, 7, 12, 13, 15, 339, 33, 34, 45, 57, 60, 85, 120, 122,
	I. Catastrophic	II. Critical	III. Marginal	IV. Minor
				146, 147, 262, 263, 344, 345, 347, 348, 350, 351, 353, 356, 357, 359, 360, 362, 363, 366, 369, 375, 381, 390, 393, 396, 399, 402, 405, 408, 411, 414, 417, 420, 423, 426, 429, 432, 435, 438, 441, 447, 449, 450, 452, 453, 463, 465, 475, 481, 484, 499, 502, 505, 508, 511, 517, 520, 523, 529, 532, 535, 538, 583, 586, 589, 592, 616, 619, 625, 628, 631, 636, 640, 643, 663, 694, 695
B. Reasonably Probable			67, 79, 82, 206, 278, 573, 576, 579, 582, 585, 588, 591, 594, 597, 600, 603, 606, 609, 612, 633	18, 456, 459, 615, 618, 621, 624, 627, 630

	I. Catastrophic	II. Critical	III. Marginal	IV. Minor
C - Occasional			207, 279, 304, 312, 314, 318, 937	150, 698, 943
D - Remote			118	144, 151, 260, 316, 320, 693, 699
E - Extremely Unlikely			52, 98, 100, 128, 130, 131, 156, 158, 159, 160, 162, 163, 168, 170, 171, 172, 174, 175, 176, 178, 179, 180, 182, 183, 184, 186, 187, 188, 190, 191, 196, 198, 199, 204, 208, 210, 211, 212, 214, 215, 220, 222, 223, 224, 226, 227, 228, 230, 231, 232, 234, 235, 240, 242, 243, 252, 254, 255, 256, 258, 259, 276, 280, 282, 283, 308,	

I. Catastrophic	II. Critical	III. Marginal	IV. Minor
		310, 371, 377, 383, 386, 443, 486, 489, 495, 525, 677, 678, 679, 701, 702, 703, 705, 706, 707, 709, 710, 711, 713, 714, 715, 717, 718, 719, 753, 754, 755, 757, 758, 759, 761, 762, 763, 765, 766, 767, 769, 770, 771, 773, 774, 775, 777, 778, 779, 781, 782, 783, 785, 786, 787, 789, 790, 791, 793, 794, 795, 797, 798, 799, 801, 802, 803, 805, 806, 807, 809, 810, 811, 813, 814, 815, 817, 818, 819, 821, 822, 823, 825, 826, 827, 829, 830, 831, 833, 834, 835, 841, 842, 843, 849, 850, 851, 853, 854, 855, 857, 858, 859, 877, 878, 879, 885, 886, 887, 889, 890, 891, 901, 902, 903, 913, 914,	

Criticality Matrix

I. Catastrophic	II. Critical	III. Marginal	IV. Minor
		915, 917, 918, 919, 921, 922, 923, 939, 941	4, 10, 16, 25, 31, 37, 43, 49, 55, 58, 64, 102, 104, 106, 108, 124, 126, 127, 132, 134, 135, 136, 138, 139, 140, 142, 143, 148, 152, 154, 155, 164, 166, 167, 192, 194, 195, 200, 202, 203, 216, 218, 219, 236, 238, 239, 244, 246, 247, 248, 250, 251, 264, 266, 267, 268, 270, 271, 272, 274, 275, 284, 286, 287, 288, 290, 291, 292, 294, 295, 306, 365, 368, 374, 380, 389, 392, 395, 398, 401, 404, 407, 410, 413, 416, 419, 422, 425, 428, 431, 434, 437, 440, 446, 455, 458, 469, 480, 483, 492, 498, 501, 504, 507, 510, 513, 516, 519, 522, 528, 531

I. Catastrophic	II. Critical	III. Marginal	IV. Minor
			534, 537, 649, 651, 665, 666, 667, 669, 670, 671, 673, 674, 675, 681, 682, 683, 685, 686, 687, 689, 690, 691, 697, 721, 722, 723, 725, 726, 727, 729, 730, 731, 733, 734, 735, 737, 738, 739, 741, 742, 743, 745, 746, 747, 749, 750, 751, 837, 838, 839, 845, 846, 847, 861, 862, 863, 865, 866, 867, 869, 870, 871, 873, 874, 875, 881, 882, 883, 893, 894, 895, 897, 898, 899, 905, 906, 907, 909, 910, 911, 925, 926, 927, 929, 930, 931, 933, 934, 935

Figure 1.4-2: FMEA Mode Criticality Matrix detailed listings. The numbers correspond to failure modes in the FMECA_Criticality_Risks.xls file.

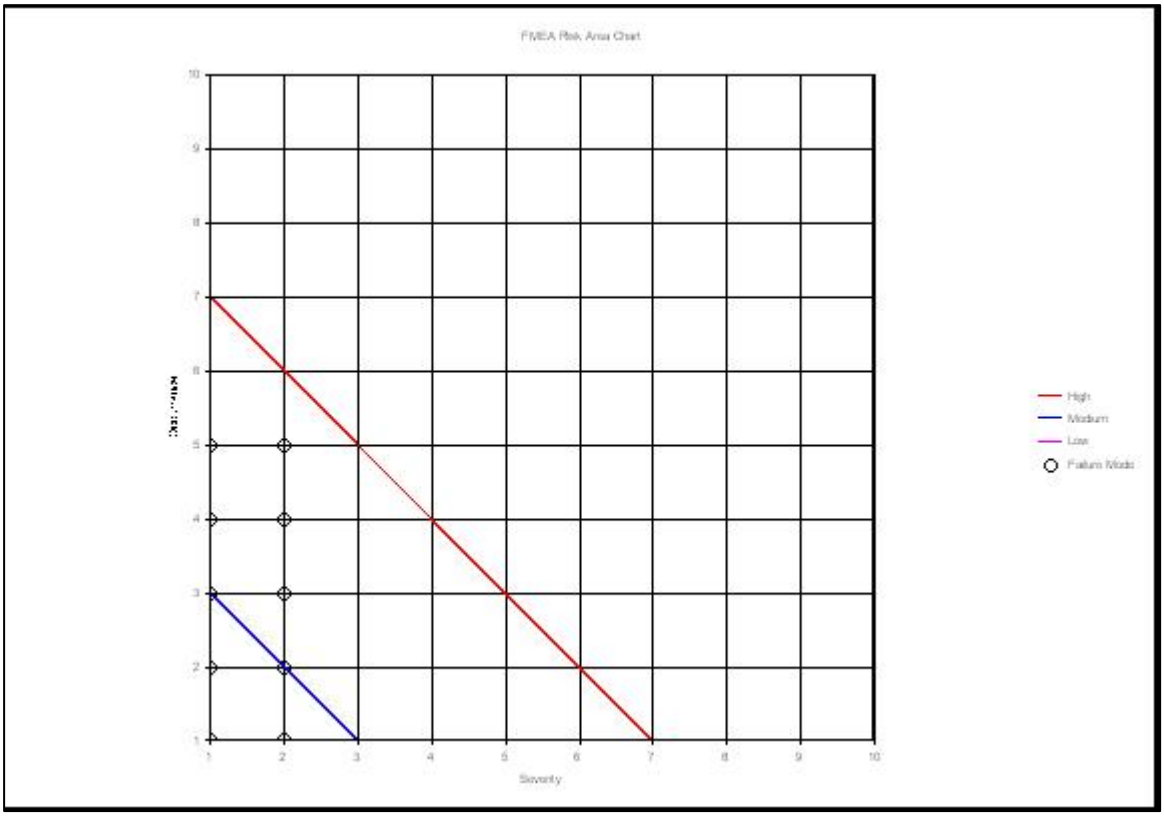

Figure 1.4-3: FMEA Risk Levels Chart. Failure modes are ranked by severity level. Lines divide the failure modes into low, medium and high risk levels with the failure modes shown as circles.

1.4 Conclusions and Recommendations

The battery charger board was not designed to be single point failure (items that would result in failure of the system and are not compensated for by redundancy or alternative operational procedure) proof. As this analysis suggests, there are several single point failure modes that can inhibit or restrain operation of the board. They are documented in FMECA Modes List.xls. However, there are no failures that are classified as severe or catastrophic.

A separate criticality/risk levels XLS file has also been included in a separate file entitled, FMECA_Criticality_Risks.xls. It contains a relative measure of the consequences of each failure mode and their frequency of occurrence including the failure mode criticality number and the item criticality number (as defined by MIL-STD-1629A).