

ABNORMAL TEST RESULT
OF MODEL KHEA90F/KHNA90F

1. Did Cheese Cloth or Paper Glow?

No.

2. Did Ground Fuse Open?

No.

3. Dielectric breakdown?

No.

4. Other Results?

See the following pages .

(FMEA : 2/21 ~ 18/21)

(Abnormal Test Result: 19/21 ~ 21/21)

There was no emission of flame, molten metal, ignition of cheesecloth, dielectric breakdown, opening of the ground fuse, other indication of a shock or fire hazard.

F M E A

Component	Mode	Comment	Output Voltage (V)
C101	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C102	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C105	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C106	Open	See 19 Page.	
	Short	No Hazard.	AVR1:0
C111	Open	Normal operation.	
	Short	Normal operation.	
C112	Open	Normal operation.	
	Short	Normal operation.	
C113	Open	Normal operation.	
	Short	Normal operation.	
C114	Open	Normal operation.	
	Short	Normal operation.	
C115	Open	Normal operation.	
	Short	Normal operation.	
C116	Open	Normal operation.	
	Short	Normal operation.	
C121	Open	Normal operation.	
	Short	Normal operation.	
C122	Open	Normal operation.	
	Short	Normal operation.	

F M E A

Component	Mode	Comment	Output Voltage (V)
C123	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C124	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C125	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C141	Open	Normal operation.	
	Short	Normal operation.	
C142	Open	Normal operation.	
	Short	Normal operation.	
C143	Open	Normal operation.	
	Short	Normal operation.	
C144	Open	Normal operation.	
	Short	Normal operation.	
C145	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
C201	Open	See 19 Page.	
	Short	See 19 Page.	
C202	Open	See 19 Page.	
	Short	See 22 Page.	
C203	Open	Normal operation.	
	Short	Normal operation.	
C204	Open	Normal operation.	
	Short	Normal operation.	



F M E A

Component	Mode		Comment	Output Voltage (V)
C211	Open	only 12	Normal operation.	
	Short	only 12	Output voltage decreased. No hazard.	AVR1:decreased
C212	Open		See 19 Page.	
	Short		No Hazard.	AVR1:0
C213	Open		Normal operation.	
	Short		Output voltage decreased. No hazard.	AVR1:decreased
C214	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C215	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C216	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C218	Open		Output voltage increased. No hazard.	AVR1:Increased
	Short		No Hazard.	AVR1:0
C252	Open	only 24	Normal operation.	
	Short	only 24	No Hazard.	AVR1:0
C255	Open		Normal operation.	
	Short		Normal operation.	
C257	Open		Normal operation.	
	Short		Normal operation.	
C501	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C502	Open		Normal operation.	
	Short		No Hazard.	AVR1:0



F M E A

Component	Mode		Comment	Output Voltage (V)
C503	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C504	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C505	Open	only 12	Normal operation.	
	Short	only 12	No Hazard.	AVR1:0
C506	Open	only 12	Normal operation.	
	Short	only 12	No Hazard.	AVR1:0
C507	Open	only 12	Normal operation.	
	Short	only 12	No Hazard.	AVR1:0
C515	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
C601	Open	only 12	Normal operation.	
	Short	only 12	See 19 Page.	
C602	Open		See 19 Page.	
	Short		See 19 Page.	
C633	Open		Output voltage decreased. No hazard.	AVR1:decreased
	Short		Output voltage decreased. No hazard.	AVR1:decreased
C634	Open	only 12	Output voltage decreased. No hazard.	AVR1:decreased
	Short	only 12	Output voltage decreased. No hazard.	AVR1:decreased
CN601	Open		No Hazard.	AVR1:0
	Short		No Hazard.	AVR1:0
D101	Open		No Hazard.	AVR1:0
	Short		No Hazard.	AVR1:0

F M E A

Component	Mode	Comment	Output Voltage (V)
D102	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D103	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D121	Open	Normal operation.	
	Short	Normal operation.	
D122	Open	Normal operation.	
	Short	Normal operation.	
D123	Open	Normal operation.	
	Short	Normal operation.	
D124	Open	Normal operation.	
	Short	Normal operation.	
D125	Open	Normal operation.	
	Short	Normal operation.	
D142	Open	Normal operation.	
	Short	Normal operation.	
D143	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D201	Open	Normal operation.	
	Short	See 19 Page.	
D202	Open	See 19 Page.	
	Short	See 19 Page.	
D203	Open	See 19 Page.	
	Short	See 19 Page.	

F M E A

Component	Mode	Comment	Output Voltage (V)
D204	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D213	Open	Output voltage decreased. No hazard.	AVR1:decreased
	Short	Output voltage decreased. No hazard.	AVR1:decreased
D214	Open	No Hazard.	AVR1:0
	Short	No Hazard.	AVR1:0
D215	Open	Output voltage decreased. No hazard.	AVR1:decreased
	Short	Normal operation.	
D218	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D221	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D222	Open	Normal operation.	
	Short	Normal operation.	
D231	Open	Normal operation.	
	Short	Normal operation.	
D252	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D253	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
D601	Open	See 19 Page.	
	Short	See 19 Page.	
D602	Open	Normal operation.	
	Short	Normal operation.	

F M E A

Component	Mode		Comment	Output Voltage (V)
IC141	Open	1	No Hazard.	AVR1:0
		2	Normal operation.	
		3	Normal operation.	
		4	Normal operation.	
		5	Normal operation.	
		6	No Hazard.	AVR1:0
		7	No Hazard.	AVR1:0
		8	No Hazard.	AVR1:0
	Short	1-2	See 19 Page.	
		2-3	See 19 Page.	
		3-4	See 19 Page.	
		5-6	See 19 Page.	
		6-7	See 19 Page.	
		7-8	See 19 Page.	
IC201	Open	1	No Hazard.	AVR1:0
		2	No Hazard.	AVR1:0
		3	No Hazard.	AVR1:0
		4	No Hazard.	AVR1:0
		5	No Hazard.	AVR1:0
		6	No Hazard.	AVR1:0
		8	Normal operation.	
		Short	1-2	See 19 Page.
	2-3		See 19 Page.	
	3-4		See 19 Page.	

F M E A

Component	Mode		Comment	Output Voltage (V)
IC201	Short	5-6	See 20 Page.	
IC251	Open	3	Normal operation.	
		4	Normal operation.	
		5	Normal operation.	
	Short	4-5	Normal operation.	
IC252	Open	3	Normal operation.	
		4	Normal operation.	
		5	Normal operation.	
	Short	4-5	Normal operation.	
IC601	Open	2	See 20 Page.	
		3	See 20 Page.	
		4	See 20 Page.	
		5	See 20 Page.	
		6	See 20 Page.	
		7	See 20 Page.	
		8	See 20 Page.	
		Short	2-3	See 20 Page.
	5-6		See 20 Page.	
	6-7		See 20 Page.	
	7-8		See 20 Page.	
	IC631	Open	3	No Hazard.
4			No Hazard.	AVR1:0
5			No Hazard.	AVR1:0
Short		4-5	No Hazard.	AVR1:0



F M E A

Component	Mode		Comment	Output Voltage (V)
L101	Open		No Hazard.	AVR1:0
	Short		Normal operation.	
L102	Open		No Hazard.	AVR1:0
	Short		Normal operation.	
L104	Open	2, 3	Normal operation.	
		5, 6	No Hazard.	AVR1:0
	Short	2-3	No Hazard.	AVR1:0
L601	Open		No Hazard.	AVR1:0
	Short		Normal operation.	
LED601	Open		Normal operation.	
	Short		Normal operation.	
PC211	Open	A, K	No Hazard.	AVR1:0
		C, E	No Hazard.	AVR1:0
	Short	A-K	Output voltage decreased. No hazard.	AVR1:decreased
		C-E	No Hazard.	AVR1:0
PC251	Open	A, K	Normal operation.	
		C, E	Normal operation.	
	Short	A-K	Normal operation.	
		C-E	No Hazard.	AVR1:0
SK101	Open		Normal operation.	
	Short		No Hazard.	AVR1:0
SS101	Open		No Hazard.	AVR1:0
	Short		No Hazard.	AVR1:0
T201	Open	2, 3	Output voltage decreased. No hazard.	AVR1:decreased

F M E A

Component	Mode		Comment	Output Voltage (V)
T201	Open	5, 7	No Hazard.	AVR1:0
		8, 9	See 20 Page.	
		10, 11, 12, 13	No Hazard.	AVR1:0
	Short	2-3	Output voltage decreased. No hazard.	AVR1:decreased
		8-9	See 20 Page.	
		9-10	See 20 Page.	
		10, 11-12, 13	No Hazard.	AVR1:0
TH101	Open		No Hazard.	AVR1:0
	Short		Normal operation.	
TR101	Open	D	See 20 Page.	
		S	See 20 Page.	
		G	See 20 Page.	
	Short	D-S	See 20 Page.	
		S-G	See 20 Page.	
		G-D	See 20 Page.	
TR121	Open	D	Normal operation.	
		S	Normal operation.	
		G	Normal operation.	
	Short	D-S	No Hazard.	AVR1:0
		S-G	Normal operation.	
		G-D	No Hazard.	AVR1:0
TR122	Open	C	Normal operation.	
		E	Normal operation.	
		B	Normal operation.	

F M E A

Component	Mode		Comment	Output Voltage (V)
TR122	Short	C-E	Normal operation.	
		E-B	Normal operation.	
		B-C	Normal operation.	
TR123	Open	D	Normal operation.	
		S	Normal operation.	
		G	Normal operation.	
	Short	D-S	Normal operation.	
		S-G	Normal operation.	
		G-D	Normal operation.	
TR201	Open	D	See 20 Page.	
		S	See 20 Page.	
		G	See 20 Page.	
	Short	D-S	See 21 Page.	
		S-G	See 21 Page.	
		G-D	See 21 Page.	
TR202	Open	D	See 21 Page.	
		S	See 21 Page.	
		G	See 21 Page.	
	Short	D-S	See 21 Page.	
		S-G	See 21 Page.	
		G-D	See 21 Page.	
TR211	Open	C	Output voltage decreased. No hazard.	AVR1:decreased
		E	Output voltage decreased. No hazard.	AVR1:decreased
		B	Output voltage decreased. No hazard.	AVR1:decreased

F M E A

Component	Mode		Comment	Output Voltage (V)
TR211	Short	C-E	Normal operation.	
		E-B	Normal operation.	
		B-C	Normal operation.	
TR221	Open	D	Normal operation.	
		S	Normal operation.	
		G	Normal operation.	
	Short	D-S	No Hazard.	AVR1:0
		S-G	No Hazard.	AVR1:0
		G-D	No Hazard.	AVR1:0
TR231	Open	1	No Hazard.	AVR1:0
		2	No Hazard.	AVR1:0
		3	Normal operation.	
		4	Normal operation.	
		5	Normal operation.	
		6	No Hazard.	AVR1:0
	Short	1-2	No Hazard.	AVR1:0
		2-3	No Hazard.	AVR1:0
		4-5	Normal operation.	
TR601	Open	D	See 21 Page.	
		S	See 21 Page.	
		G	See 21 Page.	
	Short	D-S	See 21 Page.	
		S-G	See 21 Page.	
		G-D	See 21 Page.	

F M E A

Component	Mode	Comment	Output Voltage (V)
VR601	Open	Output voltage decreased. No hazard.	AVR1:decreased
	Short	No Hazard.	AVR1:0
ZD121	Open	No Hazard.	AVR1:0
	Short	Normal operation.	
ZD122	Open	Normal operation.	
	Short	Normal operation.	
ZD131	Open	Normal operation.	
	Short	Normal operation.	
ZD211	Open	Normal operation.	
	Short	Output voltage decreased. No hazard.	AVR1:decreased
ZD231	Open	No Hazard.	AVR1:0
	Short	Normal operation.	
ZD601	Open	Normal operation.	
	Short	See 21 Page.	
ZD612	Open	Normal operation.	
	Short	Normal operation.	
ZD621	Open	Normal operation.	
	Short	No Hazard.	AVR1:0
R101	Open	Normal operation.	
R102	Open	Normal operation.	
R103	Open	Normal operation.	
R104	Open	Normal operation.	
R105	Open	Normal operation.	
R106	Open	Normal operation.	

F M E A

Component	Mode	Comment	Output Voltage (V)
R107	Open	Normal operation.	
R108	Open	Normal operation.	
R111	Open	Normal operation.	
R113	Open	Normal operation.	
R121	Open	Normal operation.	
R122	Open	Normal operation.	
R123	Open	Normal operation.	
R124	Open	Normal operation.	
R125	Open	Normal operation.	
R126	Open	Normal operation.	
R127	Open	Normal operation.	
R128	Open	Normal operation.	
R129	Open	Normal operation.	
R130	Open	Normal operation.	
R131	Open	Normal operation.	
R132	Open	Normal operation.	
R133	Open	Normal operation.	
R141	Open	No Hazard.	AVR1:0
R143	Open	Normal operation.	
R144	Open	Normal operation.	
R145	Open	Normal operation.	
R146	Open	No Hazard.	AVR1:0
R147	Open	No Hazard.	AVR1:0
R148	Open	Normal operation.	

F M E A

Component	Mode	Comment	Output Voltage (V)
R149	Open	Normal operation.	
R151	Open	No Hazard.	AVR1:0
R152	Open	No Hazard.	AVR1:0
R155	Open	No Hazard.	AVR1:0
R156	Open	No Hazard.	AVR1:0
R157	Open	Normal operation.	
R165	Open	No Hazard.	AVR1:0
R166	Open	Normal operation.	
R201	Open	Normal operation.	
R202	Open	Normal operation.	
R205	Open	Normal operation.	
R206	Open	Normal operation.	
R207	Open	Normal operation.	
R208	Open	Normal operation.	
R213	Open	No Hazard.	AVR1:0
R214	Open	No Hazard.	AVR1:0
R215	Open	No Hazard.	AVR1:0
R216	Open	Output voltage decreased. No hazard.	AVR1:decreased
R217	Open	Output voltage decreased. No hazard.	AVR1:decreased
R219	Open	Output voltage increased. No hazard.	AVR1:increased
R221	Open	No Hazard.	AVR1:0
R222	Open	No Hazard.	AVR1:0
R223	Open	Normal operation.	
R224	Open	No Hazard.	AVR1:0

F M E A

Component	Mode	Comment	Output Voltage (V)
R231	Open	Normal operation.	
R233	Open	Normal operation.	
R241	Open	Normal operation.	
R242	Open	Normal operation.	
R252	Open	Normal operation.	
R253	Open	Normal operation.	
R254	Open	Normal operation.	
R255	Open	No Hazard.	AVR1:0
R256	Open	Normal operation.	
R257	Open	Normal operation.	
R258	Open	No Hazard.	AVR1:0
R601	Open	Normal operation.	
R602	Open	See 21 Page.	
R603	Open	See 21 Page.	
R604	Open	See 21 Page.	
R605	Open	See 21 Page.	
R606	Open	See 21 Page.	
R607	Open	See 21 Page.	
R611	Open	Normal operation.	
R612	Open	Normal operation.	
R613	Open	Normal operation.	
R621	Open	Normal operation.	
R622	Open	Normal operation.	
R623	Open	Normal operation.	

F M E A

Component	Mode	Comment	Output Voltage (V)
R633	Open	Normal operation.	
R634	Open	No Hazard.	AVR1:0
R635	Open	No Hazard.	AVR1:0
R636	Open	No Hazard.	AVR1:0
R637	Open	Output voltage decreased. No hazard.	AVR1:decreased
R638	Open	No Hazard.	AVR1:0
R639	Open	No Hazard.	AVR1:0
R640	Open	Output voltage decreased. No hazard.	AVR1:decreased
R642	Open	Output voltage decreased. No hazard.	AVR1:decreased
R651	Open	Normal operation.	
R652	Open	Normal operation.	
R653	Open	Normal operation.	
R654	Open	Normal operation.	
R655	Open	Normal operation.	
R656	Open	Normal operation.	
R657	Open	Normal operation.	
R658	Open	Normal operation.	
R659	Open	Normal operation.	
R660	Open	Normal operation.	



ABNORMAL TEST RESULT

Component	Mode		Comment	Output Voltage (V)
C106	Open		F101 opened, No hazard.	AVR1:0
C201	Open		Normal operation.	
	Short		Normal operation.	
C202	Open		Normal operation.	
C212	Open		Normal operation.	
C601	Short	only 12	Normal operation.	
C602	Open		Normal operation.	
	Short		Normal operation.	
D201	Short		Normal operation.	
D202	Open		Normal operation.	
	Short		Normal operation.	
D203	Open		Normal operation.	
	Short		Normal operation.	
D601	Open		Normal operation.	
	Short		Normal operation.	
IC141	Short	1-2	Normal operation.	
		2-3	No Hazard.	AVR1:0
		3-4	No Hazard.	AVR1:0
		5-6	Normal operation.	
		6-7	No Hazard.	AVR1:0
		7-8	F101 opened, No hazard.	AVR1:0
IC201	Short	1-2	No Hazard.	AVR1:0
		2-3	No Hazard.	AVR1:0
		3-4	F101 opened, No hazard.	AVR1:0

ABNORMAL TEST RESULT

Component	Mode		Comment	Output Voltage (V)
IC201	Short	5-6	No Hazard.	AVR1:0
IC601	Open	2	No Hazard.	AVR1:0
		3	No Hazard.	AVR1:0
		4	No Hazard.	AVR1:0
		5	Normal operation.	
		6	No Hazard.	AVR1:0
		7	Normal operation.	
		8	Normal operation.	
		Short	2-3	Normal operation.
	5-6		Normal operation.	
	6-7		Normal operation.	
	7-8		No Hazard.	AVR1:0
	T201	Open	8,9	Normal operation.
Short		8-9	Normal operation.	
		9-10	No Hazard.	AVR1:0
TR101	Open	D	No Hazard.	AVR1:0
		S	No Hazard.	AVR1:0
		G	F101 opened, No hazard.	AVR1:0
	Short	D-S	F101 opened, No hazard.	AVR1:0
		S-G	No Hazard.	AVR1:0
		G-D	F101 opened, No hazard.	AVR1:0
TR201	Open	D	No Hazard.	AVR1:0
		S	No Hazard.	AVR1:0
		G	F101 opened, No hazard.	AVR1:0



ABNORMAL TEST RESULT

Component	Mode		Comment	Output Voltage (V)
TR201	Short	D-S	F101 opened, No hazard.	AVR1:0
		S-G	No Hazard.	AVR1:0
		G-D	F101 opened, No hazard.	AVR1:0
TR202	Open	D	Normal operation.	
		S	Normal operation.	
		G	Normal operation.	
	Short	D-S	No Hazard.	AVR1:0
		S-G	Normal operation.	
		G-D	No Hazard.	AVR1:0
TR601	Open	D	No Hazard.	AVR1:0
		S	No Hazard.	AVR1:0
		G	Normal operation.	
	Short	D-S	No Hazard.	AVR1:0
		S-G	Normal operation.	
		G-D	No Hazard.	AVR1:0
ZD601	Short		Normal operation.	
R602	Open		Normal operation.	
R603	Open		Normal operation.	
R604	Open		Normal operation.	
R605	Open		Normal operation.	
R606	Open		Normal operation.	
R607	Open		Normal operation.	