



# TEST REPORT

**MODEL NAME : UPF60S24CQH**

1. DESIGN VERIFY TEST
  - 1-1. INPUT FUNCTION TEST
  - 1-2. OUTPUT FUNCTION TEST
  - 1-3. PROTECTION FUNCTION TEST
2. SAFETY&EMC TEST
3. RELIABILITY TEST

## 1. DESIGN VERIFY TEST

### 1-1. INPUT FUNCTION TEST

TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
VOLTAGE RANGE	90~305VAC	I/P: testing O/P:full load Ta:25 °C	test ok	P
FREQUENCY RANGE	47~63Hz no damage osc	I/P:90~305VAC O/P:full~min. load Ta:25 °C	test ok	P
POWER FACTOR	0.95 min.	I/P:115VAC I/P:230VAC O/P:full load	PF=0.99/115VAC PF=0.97/230VAC	P
EFFICIENCY	86% typ.	I/P:230VAC O/P:full load Ta:25 °C	87.3%	P
AC CURRENT	0.8A/115VAC typ. 0.4A/230VAC typ.	I/P:115VAC I/P:230VAC O/P:full load Ta:25 °C	0.72A/115VAC 0.31A/230VAC	P
INRUSH CURRENT	40A typ. cold start	I/P:230VAC O/P:full load Ta:25 °C	43.7A	P
LEAKAGE CURRENT	2.5mA max.	I/P:230VAC O/P:min. load Ta:25 °C	1.5mA	P

### 1-2. OUTPUT FUNCTION TEST

TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
OPERATING VOLTAGE RANGE	O/P:14.4~24V/2.5A±5%	I/P:230VAC O/P:CV mode Ta:25 °C	O/P=14.4V:2.502A O/P=24V:2.498A	P
CURRENT ADJ. RANGE	2.5A-30%/+5%	I/P:230VAC O/P:full load Ta:25 °C	1.45~2.79A	P
RIPPLE&NOISE	150mVp-p max.	I/P:230VAC O/P:full load Ta:25 °C	90mV p.p	P

<b>SETUP TIME</b>	3000ms/115VAC max. 3000ms/230VAC max.	I/P:115VAC I/P:230VAC O/P:full load Ta:25 °C	816ms/115VAC 304ms/230VAC	<b>P</b>
<b>RISE TIME</b>	100ms/115VAC max. 100ms/230VAC max.	I/P:115VAC I/P:230VAC O/P:full load Ta:25	22.6ms/115VAC 16.4ms/230VAC	<b>P</b>
<b>HOLD UP TIME</b>	50ms/115VAC typ. 50ms/230VAC typ.	I/P:115VAC I/P:230VAC O/P:full load Ta:25	22.8ms/115VAC 61.2ms/230VAC	<b>P</b>

## 1-3. PROTECTION FUNCTION TEST

TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
<b>SHORT PROTECTION</b>	short every output 1 hour no damage	I/P:305VAC O/P:full load Ta:25 °C	no damage, recovers automatically after fault removed	<b>P</b>
<b>OVER VOLTAGE PROTECTION</b>	115~140%	I/P:115VAC I/P:230VAC O/P:min. load Ta:25 °C	125%/115VAC 125%/230VAC recovers automatically after fault removed	<b>P</b>
<b>OVER TEMP. PROTECTION</b>	temp. sensor: 105±10 °C no damage	I/P:230VAC O/P:full load	O.T.P active, automatically after fault removed	<b>P</b>

## 2. SAFETY & EMC TEST

TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
<b>WITHSTAND VOLTAGE</b>	I/P-O/P:3.75KVAC/1min<10mA I/P-F/G:2KVAC/1min<10mA O/P-F/G:1.5KVAC/1min<10mA	I/P-O/P:3.75KVAC/1min I/P-F/G:2KVAC/1min O/P-F/G:1.5KVAC/1min Ta:25 °C	I/P-O/P:3.7mA I/P-F/G:2.8mA O/P-F/G:2.5mA no damage	<b>P</b>

<b>ISOLATION RESISTANCE</b>	I/O-O/P:500VDC>100MΩ I/O-F/G:500VDC>100MΩ O/P-F/G:500VDC>100MΩ	I/P-O/P:500VDC I/P-F/G:500VDC O/P-F/G:500VDC Ta:25℃	I/P-O/P: ∞ I/P-F/G: ∞ O/P-F/G: ∞ no damage	<b>P</b>
<b>SURGE</b>	IEC61000-4-5 industry L-N:4KV L,N-PE:6KV	I/P:230VAC/50Hz O/P:full load Ta:25℃	criteria A	<b>P</b>

### 3. RELIABILITY TEST

TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
<b>LOW TEMP. TURN ON TEST</b>	turn on after 2hour	I/P:230VAC O/P:full load Ta:-40℃	test ok	<b>P</b>
<b>STORAGE TEMP. TEST</b>	no damage	1.thermal shock temp.: -40~+80℃ 2.test time low & high temp.:30min/each 3.total cycle:5cycle 4.input/output condition:static	test ok	<b>P</b>
<b>HIGH VOLT. HIGH TEMP. HIGH HUMI. TEST</b>	no damage after 12hour	I/P:305VAC O/P:full load Ta:70℃ HUMI.:95%RH	test ok	<b>P</b>
<b>THERMAL SHOCK TEST</b>	no damage	1.thermal shock temp.: -40~+70℃ 2.test time low & high temp.:30min/each 3.total cycle:10cycle 4.input/output condition: 230VAC full load, AC on/off test (turn on 58sec,turn off 2sec)	test ok	<b>P</b>
<b>VIBRATION TEST</b>	no damage	1.CATON&1SET 1.wave form:sine wave 2.frequency:10~500Hz 3.sweep time:12min./sweep cycle 4.acceleration:5G 5.test time:72min. in each(X,Y,Z) 6.Ta:25℃	test ok	<b>P</b>