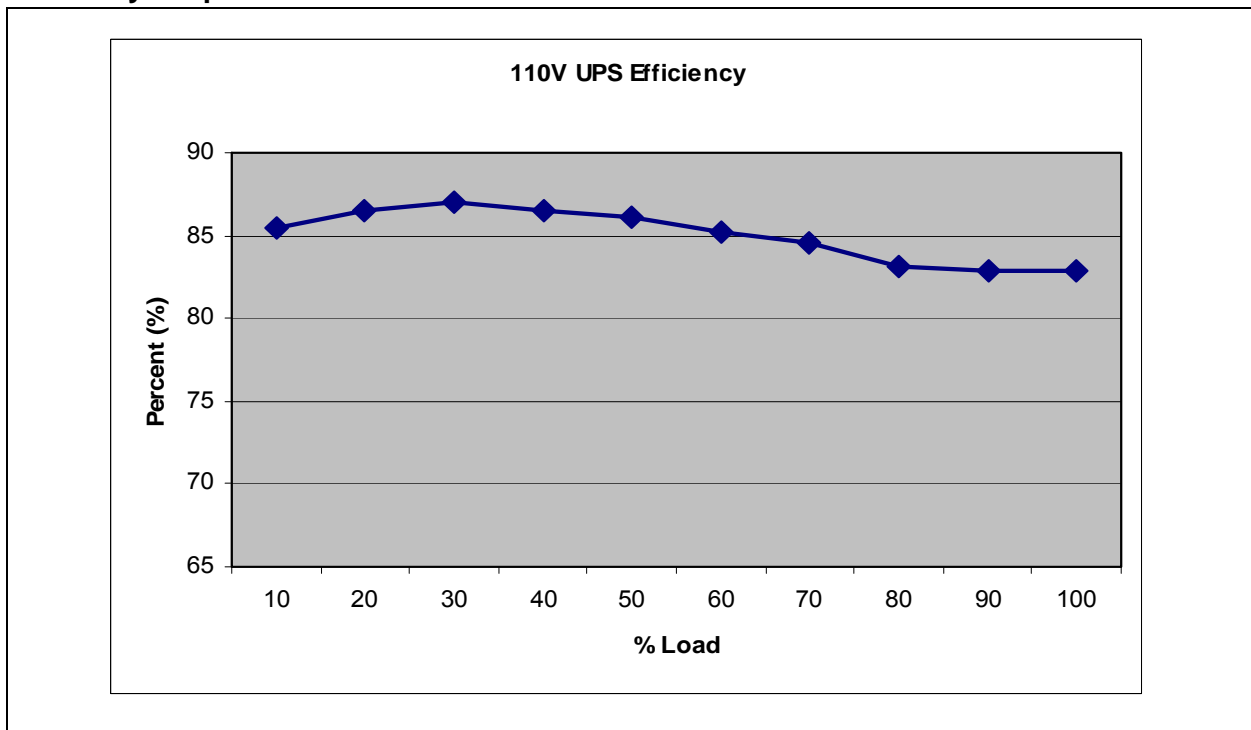


# OFFLINE UPS ADDENDUM TO AN1279

This addendum is to be used in conjunction with the Offline UPS Reference Design Application Note (AN1279). The material covered in this addendum applies to the 110V version of the Offline UPS Reference Design.

## Efficiency Graph



## Hardware Changes

The following table calls out specific hardware changes made for the 110V Offline UPS Reference Design.

Designator	Value / Description	Manufacturer Part Number	Comments
T1	Push-Pull Transformer (N = 4:32)	Custom Wound	The construction of the transformer, bobbin, and core remained the same
C5, C7	Push-Pull Output Capacitors (1500 $\mu$ F, 250V)	EET-ED2E152EA	
Q7, Q8, Q9, Q10	Inverter IGBT's (600V, 40A)	STGP19NC60WD	
R87	9.10 kOhm 1/8W 1%	MCR10EZHF9101	
R138, R158, R162, R178	4.30 kOhm 1/8W 1%	MCR10EZHF4301	AC sense (ACi, ACo)
R137, R157	3.30 kOhm 1/8W 1%	MCR10EZHF3301	DC Bus sense (Udc)

# OFFLINE UPS ADDENDUM TO AN1279

## Electrical Specifications

The following table provides the electrical specifications for the 110V version of the Offline UPS Reference Design.

Parameter	Description	Min	Typ	Max	Units	Comments
$V_{IN}$	Input Voltage	99	110	121	V	
$f_{IN}$	Input Frequency	57	60	63	Hz	
$V_{OUT}$	Output Voltage	—	110	—	V	
$f_{OUT}$	Output Frequency	59	60	61	Hz	
$V_{BATTERY}$	Battery Input Voltage	34	36	45	V	
$P_{OUT}$	Continuous Output Power	—	—	1000	VA	
OLP	Over Load Protection	>100	—	135	%	1350 VA (2 sec)
THD	Output Voltage THD	—	—	5	%	Full Load Resistive
$\eta$	System Efficiency Battery Charger Mode	—	84	—	%	
	Inverter Mode System Efficiency	—	84	—	%	
$t_{TRANSFER}$	Mains to Inverter Transfer Time	—	—	12	ms	
	Inverter to Mains Transfer Time	—	0	—	ms	
$I_{CHARGE}$	Battery Charge Current	—	2	2.5	A	
$I_{BATTERY}$	Battery Input Current ( <b>Note 1</b> )	—	—	40	A	@100% Load
T	Operating Temperature	—	25	—	°C	
CF	Crest Factor	—	—	3:1	—	
PF	Power Factor (Inductive Load)	.65	—	—	—	Only tested at .8 PF
	Power Factor (Rectifier Load)	.65	—	—	—	

**Note 1:** UPS run time will vary with output load current and the discharge rate of the batteries. Refer to the battery data sheet for specific discharge times.