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Evaluation Method 評價方法

Circuit used for determination 特性電路圖

Circuit 1 特性回路1

Line&Load Regulation And Temperature Chafaile Character (輸入&負荷及溫度變動特性)

Over-Voltage Protection (過電壓保護特性)

Over-Current Protection (過電流保護特性)

Dynamic ripple Character(動態負載特性)

Efficiency Character(效率特性)

Input&Load Change Character(輸入&負荷變動特性)

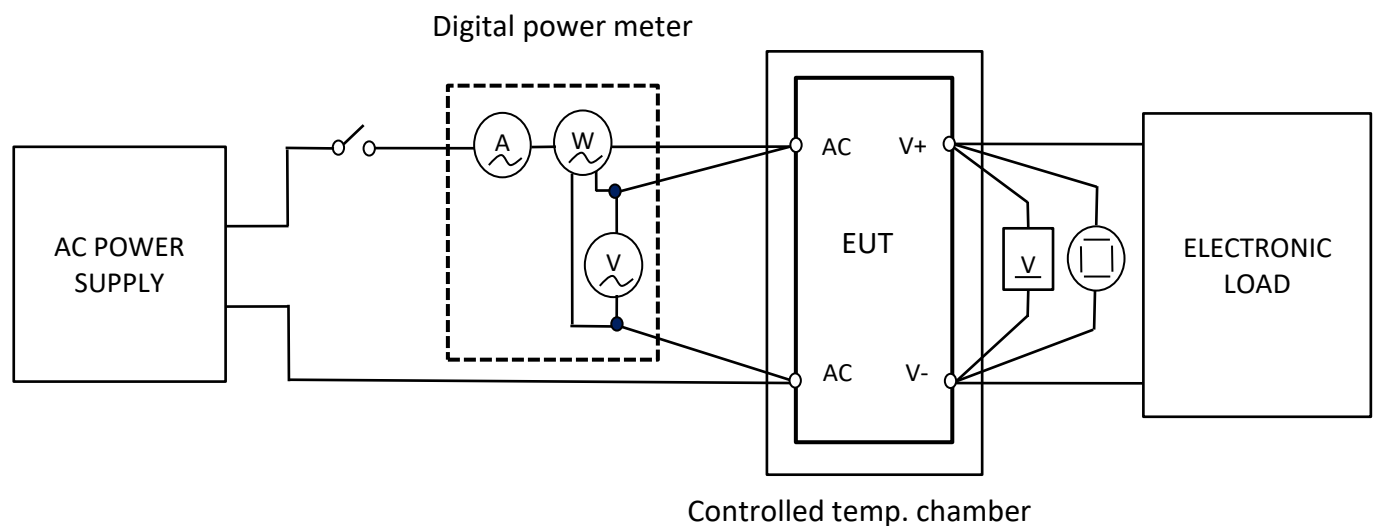
Turn On Delay(開機爬升延遲時間)

Hold Up Time Character (保持時間)

Low Vac Shut Off (輸入欠壓關斷特性)

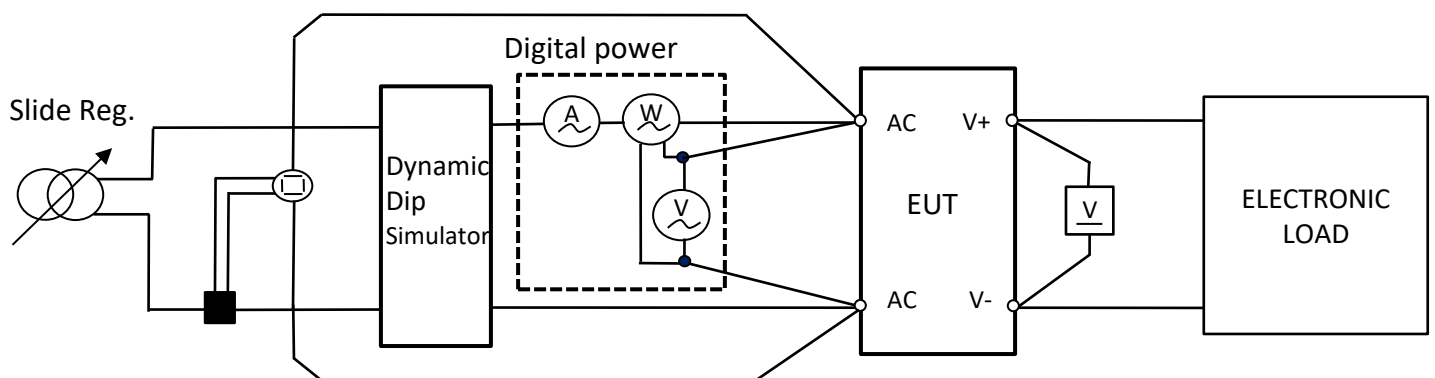
Over Shoot(過沖特性)

Under Shoot(下沖特性)



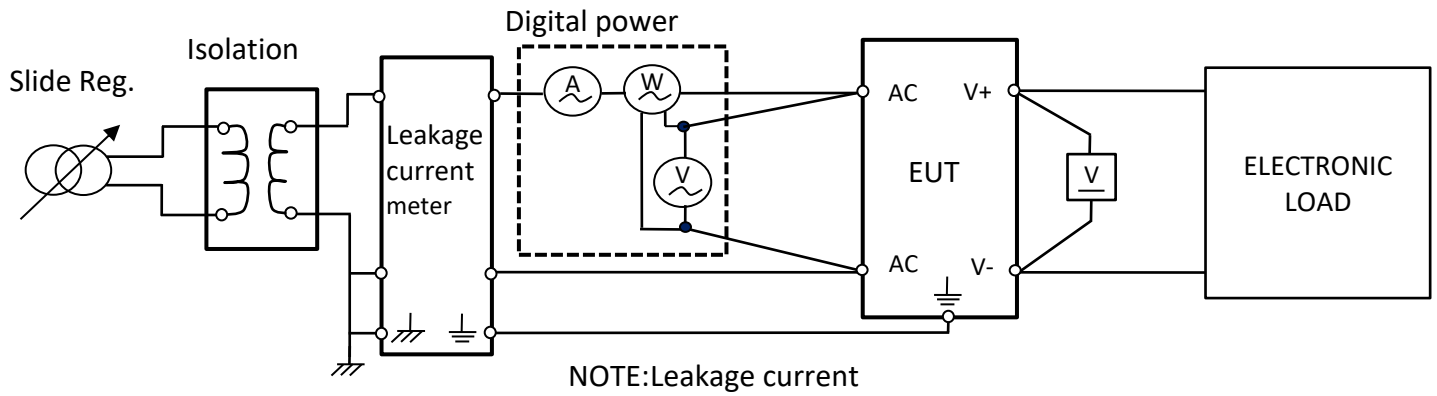
Circuit 2 特性回路2

Inrush Current (浪涌電流)



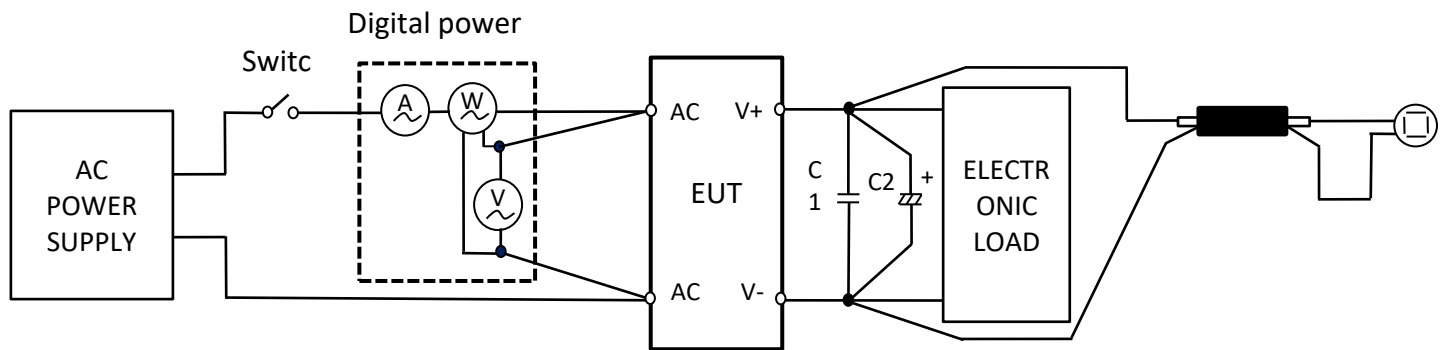
Circuit 3 特性回路3

Leak Current (漏電流特性)



Circuit 4 特性回路4

Ripple And Noise Character(紋波特性)



C1 : 0.1 μ F CERAMICS CAPACITOR

C2 : 10 μ 100V ALUMINUM CAPACITOR

THE BANDWIDTH OF OSCILLOSCOPE IS SET WITH 20MHz

1.ELECTRICAL FUNCTION Character(電氣特性)

1-1.Line&Load Regulation And Temperature Chafaile Character (輸入& 負荷及溫度變動特性)

※ Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	85Vac/100Vac/240Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	0%,25%,50%,75%,100% Of Full Load
4	Regulation(調整率)	Load Regulation: $\leq 10\%$; Line Regulation $\leq 2\%$
5	Ambient Temp.(°C)(環境溫度)	25°C
6	Sample Size(取樣數)	1PCS

Output voltage	12.0V
----------------	-------

※ Character Data(特性數據) :

O/P \ I/P	85Vac/63Hz	100Vac/60Hz	240Vac/50Hz	265Vac/47Hz	Line Regulation $\leq 2\%$
0%	12.415V	12.417V	12.417V	12.418V	0.03%
25%	12.398V	12.399V	12.399V	12.4V	0.02%
50%	12.379V	12.38V	12.38V	12.381V	0.02%
75%	12.36V	12.361V	12.362V	12.362V	0.02%
100%	12.34V	12.342V	12.343V	12.343V	0.03%
Load Regulation: $\leq 10\%$	0.62%	0.62%	0.62%	0.62%	

1-2.1 Ripple And Noise Character (紋波與雜訊)

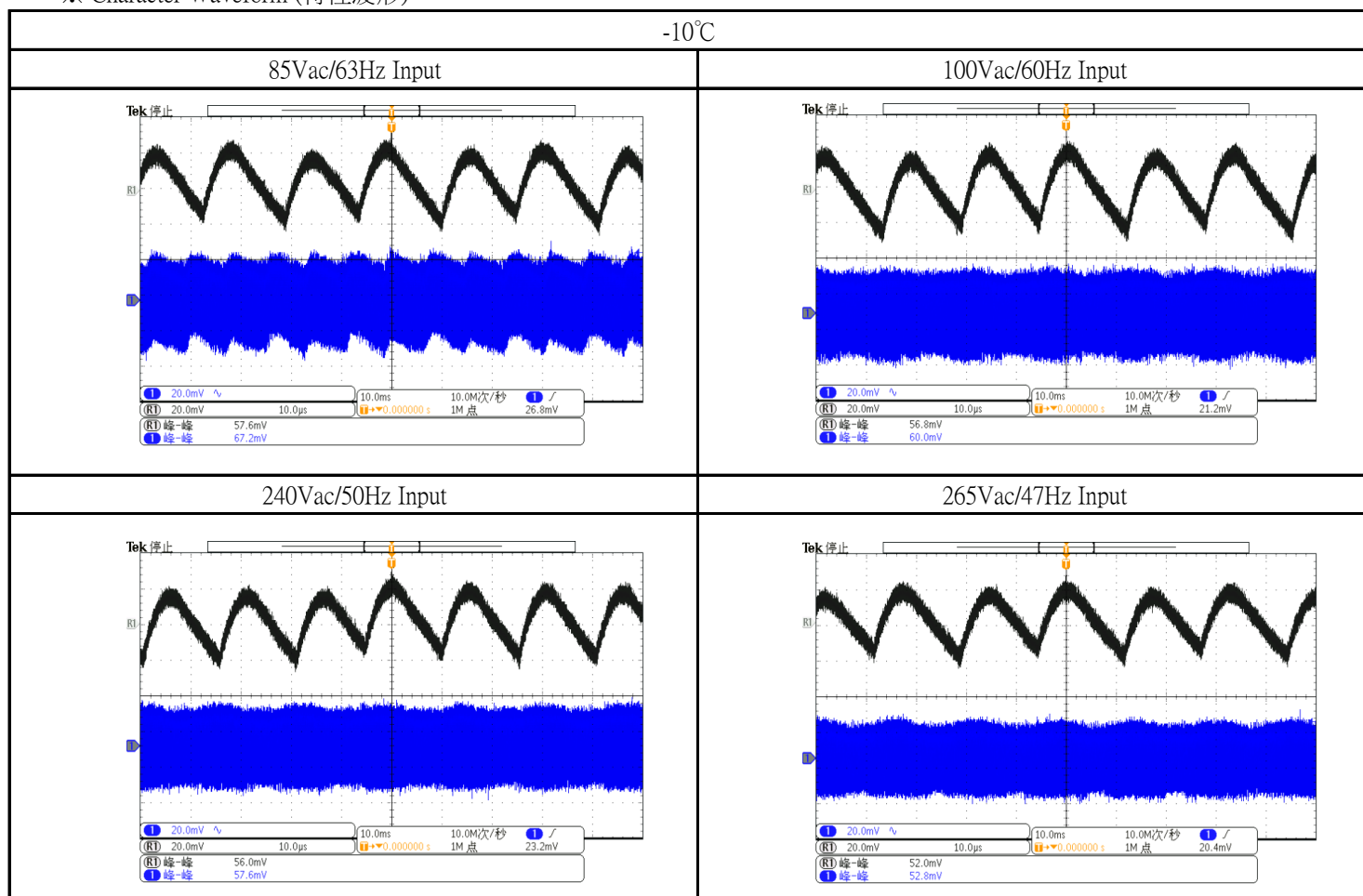
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/100Vac/240Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	-10°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	85Vac/63Hz		100Vac/60Hz		240Vac/50Hz		265Vac/47Hz	
ITEM	Ripple	Noise	Ripple	Noise	Ripple	Noise	Ripple	Noise
-10°C	57.6mV	67.2mV	56.8mV	60.0mV	56.0mV	57.6mV	52.0mV	52.8mV

※ Character Waveform (特性波形):



1-2.3 Ripple And Noise Character (紋波與雜訊)

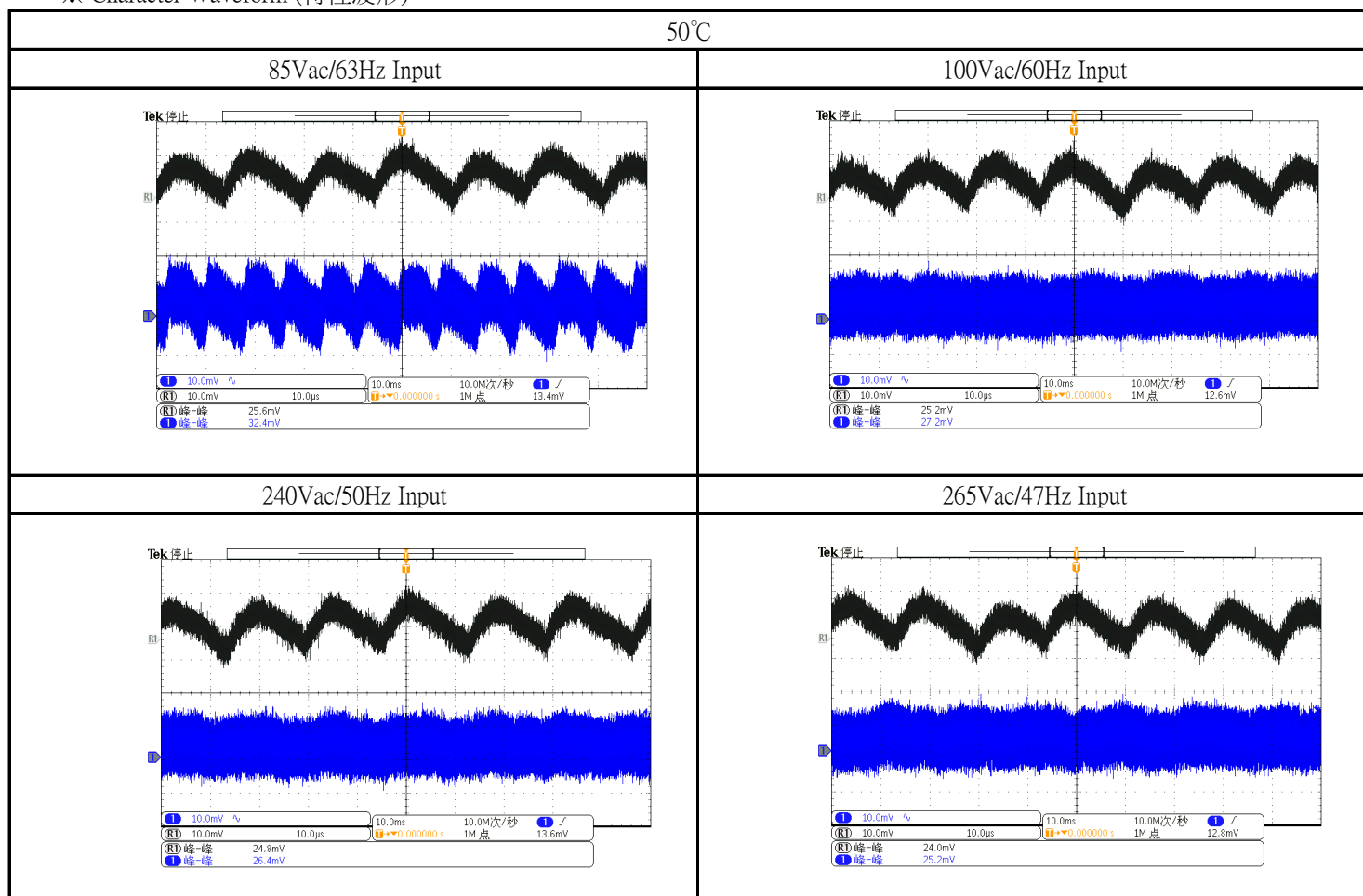
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/100Vac/240Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	50°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	85Vac/63Hz		100Vac/60Hz		240Vac/50Hz		265Vac/47Hz	
ITEM	Ripple	Noise	Ripple	Noise	Ripple	Noise	Ripple	Noise
50°C	25.6mV	32.4mV	25.2mV	27.2mV	24.8mV	26.4mV	24.0mV	25.2mV

※ Character Waveform (特性波形):



1-3.Over-Voltage Protection(過電壓保護特性)

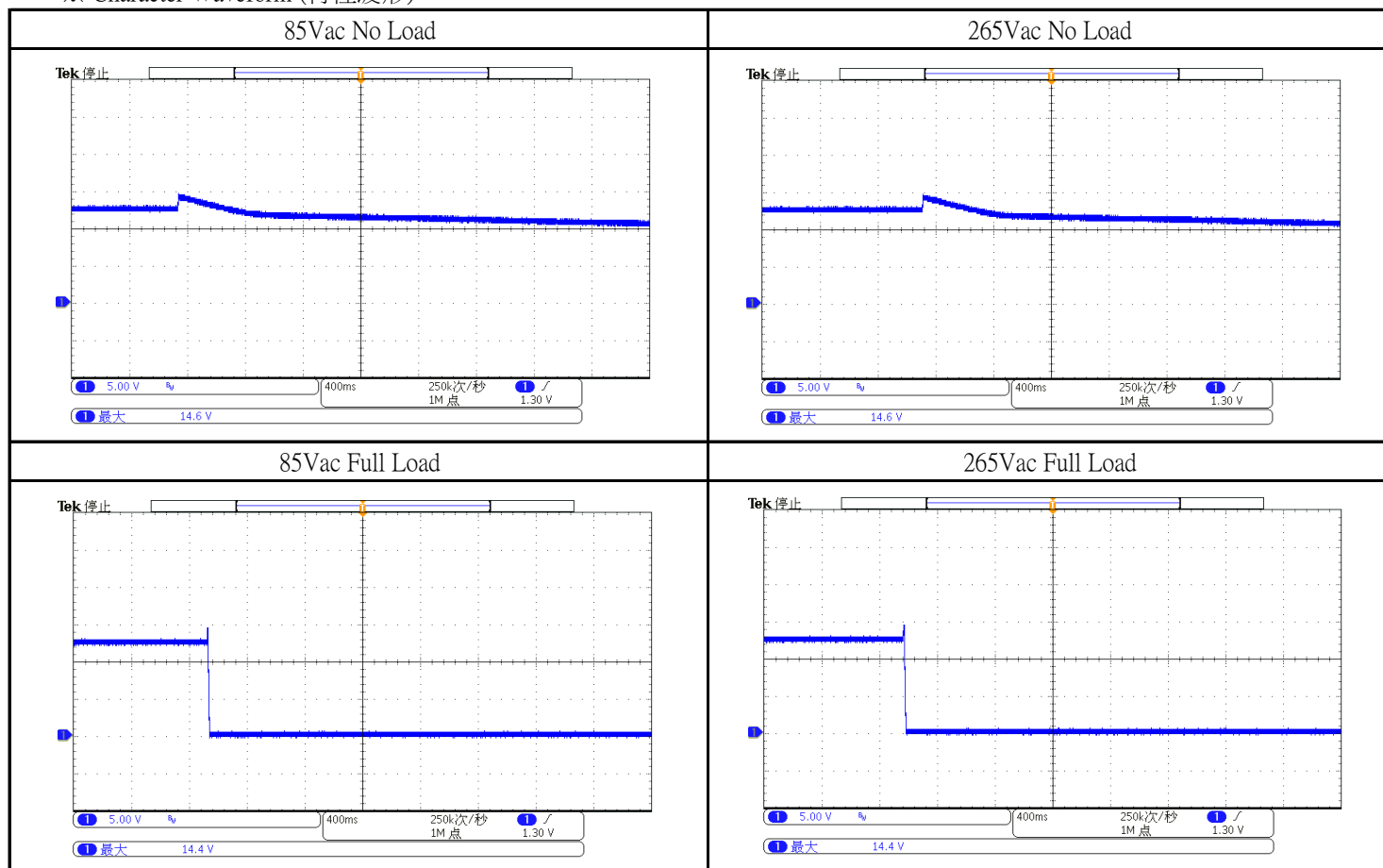
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	No/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

O/P	No Load		Full Load	
I/P	85Vac/63Hz	265Vac/47Hz	85Vac/63Hz	265Vac/47Hz
Character Result	14.6V	14.6V	14.4V	14.4V

※ Character Waveform (特性波形):



1-4.Over-Current Protection(過電流保護特性)

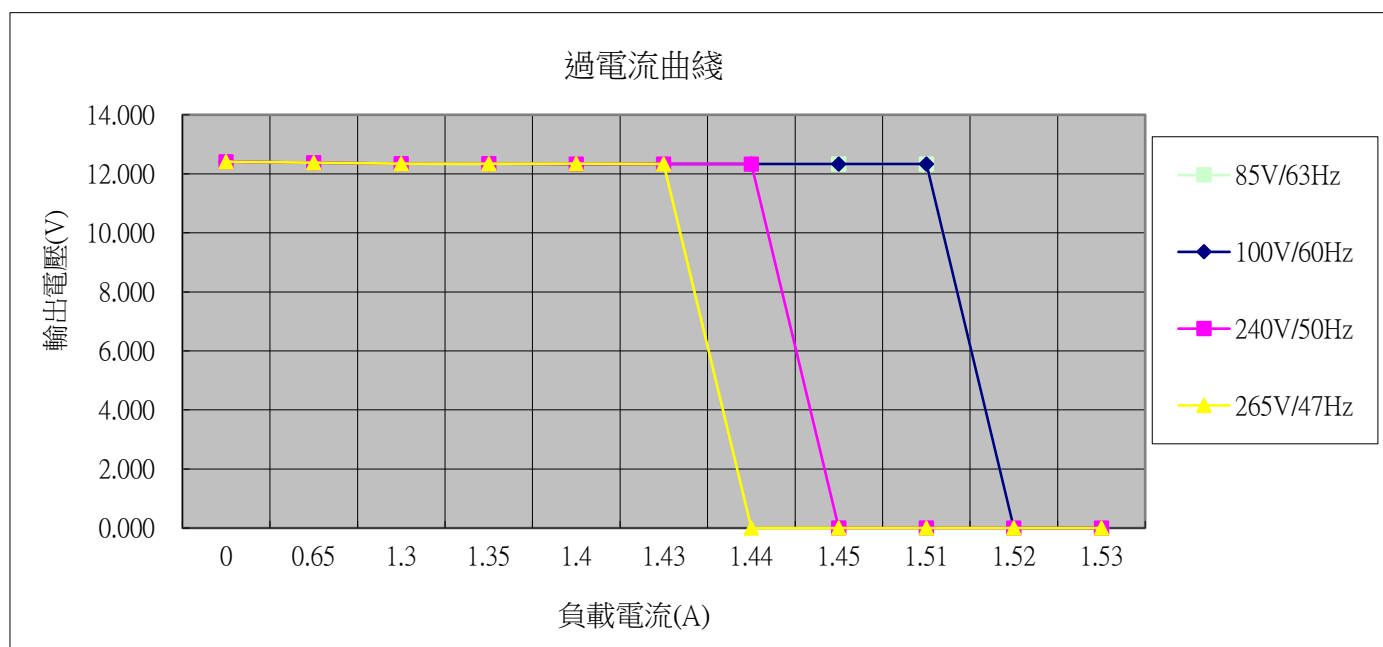
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/100Vac/240Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	85V/63Hz	100V/60Hz	240V/50Hz	265V/47Hz
O.C.P點	1.52A	1.52A	1.45A	1.44A

I/P	85V/63Hz										
Voltage(V)	12.415	12.379	12.342	12.339	12.336	12.335	12.335	12.334	12.332	0	0
Current(A)	0	0.65	1.3	1.35	1.4	1.43	1.44	1.45	1.51	1.52	1.53
I/P	100V/60Hz										
Voltage(V)	12.414	12.381	12.344	12.341	12.338	12.337	12.336	12.336	12.332	0	0
Current(A)	0	0.65	1.3	1.35	1.4	1.43	1.44	1.45	1.51	1.52	1.53
I/P	240V/50Hz										
Voltage(V)	12.413	12.382	12.345	12.342	12.339	12.338	12.337	0.000	0.000	0	0
Current(A)	0	0.65	1.3	1.35	1.4	1.43	1.44	1.45	1.51	1.52	1.53
I/P	265V/47Hz										
Voltage(V)	12.412	12.383	12.346	12.343	12.340	12.338	0.000	0.000	0.000	0	0
Current(A)	0	0.65	1.3	1.35	1.4	1.43	1.44	1.45	1.51	1.52	1.53



1-5. Dynamic ripple Character(動態負載特性)

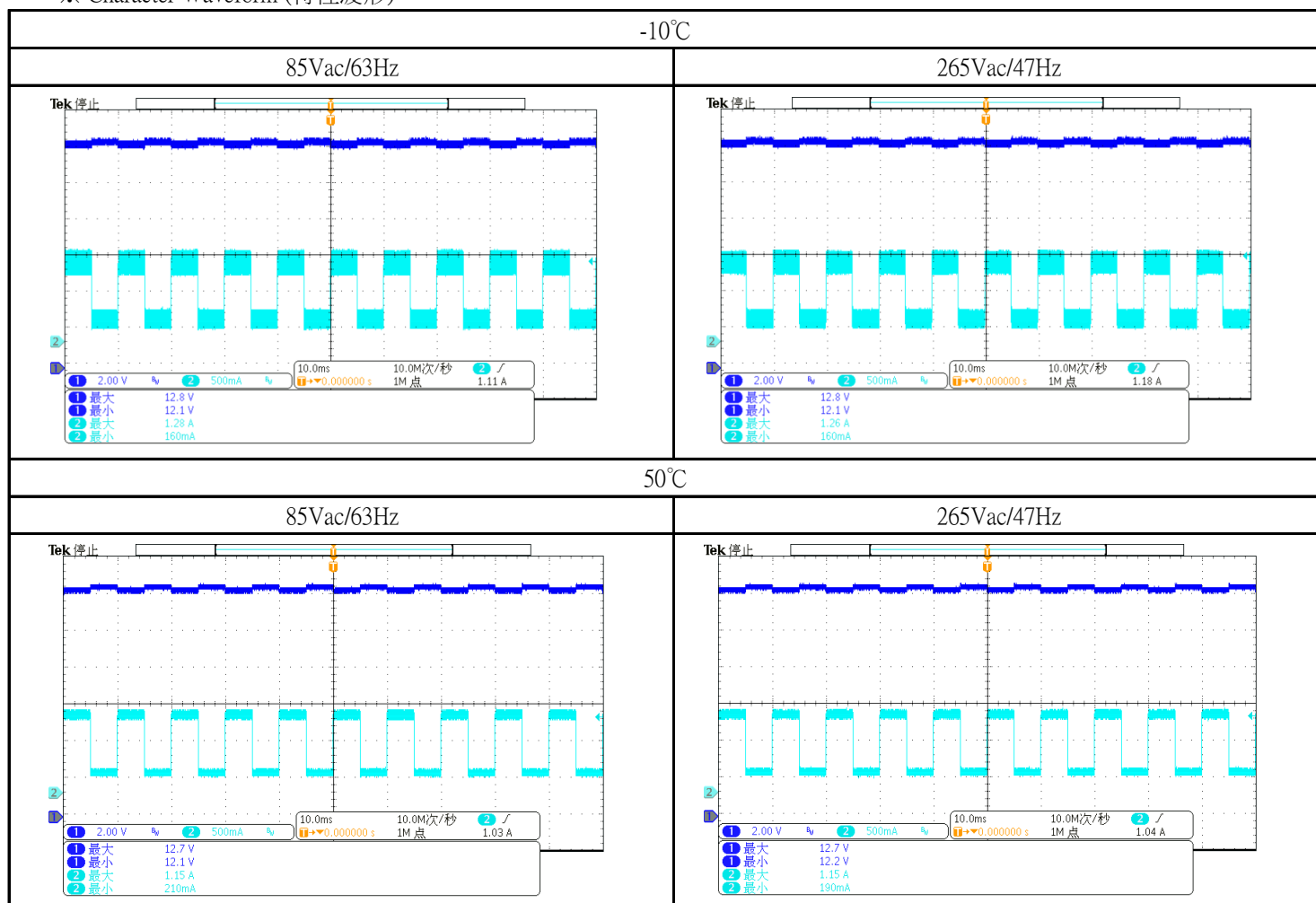
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	20%-80% Full Load,TH=5ms,TL=5ms,Slew rate=0.1A/us
4	Ambient Temp.(°C)(環境溫度)	- 10°C/50°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

I/P	85Vac/63Hz		265Vac/47Hz	
O/P	Max	Min	Max	Min
-10°C	12.8V	12.1V	12.8V	12.1V
50°C	12.7V	12.1V	12.7V	12.2V

※ Character Waveform (特性波形):



1-6.Efficiency Character(效率特性)

※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	115Vac/230Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz / 60Hz
3	Output Load(輸出負載)	0%,10%,25%,50%,75%,100% of Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6	Output Load(輸出負載)	2.0A

※ Character Data(特性數據):

使用線材	N/A
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Efficiency								Stand by consumption	
Load		10% 25% 50% 75% 100%						0%	
I/P		115Vac/60Hz			230Vac/50Hz			Input 115V/60Hz	230V/50HZ
O/P Load		Pin (W)	Pout (W)	Efficiency (%)	Pin (W)	Pout (W)	Efficiency (%)	0.035W	0.063W
10%	0.13A	1.83	1.570	85.79%	1.93	1.580	81.87%		
25%	0.325A	4.48	3.990	89.06%	4.57	3.990	87.31%		
50%	0.65A	8.98	8.000	89.09%	9.04	8.010	88.61%		
75%	0.975A	13.52	12.010	88.83%	13.49	12.010	89.03%		
100%	1.3A	18.12	15.990	88.25%	17.97	16.000	89.04%		
Average				88.81%			88.50%		

1-7.Input&Load Change Character(輸入& 負荷變動特性)

※ Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	85Vac~265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz ~63Hz
3	Output Load(輸出負載)	No Load and Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6		

※ Character Equipment(特性設備) :

ITEM	Equipment Item(設備)	Model No. / Manufacturer(製造商和型號)
1	AC Source(變頻器)	ALL POWER/APG-1005N
2	Power Meter(功率表)	YOKOGAWA/WT310
3	DC Load(DC負載)	ITECH/IT8512+

※ Character Data(特性數據) :

Input change with no load			
No Load		Input Condition	
		85V/63Hz	265Vac/47Hz
	Input Current (A)	0.0016	0.0033
	Input Power (W)	0.03	0.117
Input change with full load			
Full Load		Input Condition	
		85V/63Hz	265Vac/47Hz
	Input Current (A)	0.36	0.161
	Input Power (W)	17.96	17.56

1-8.Inrush Current (浪涌電流)

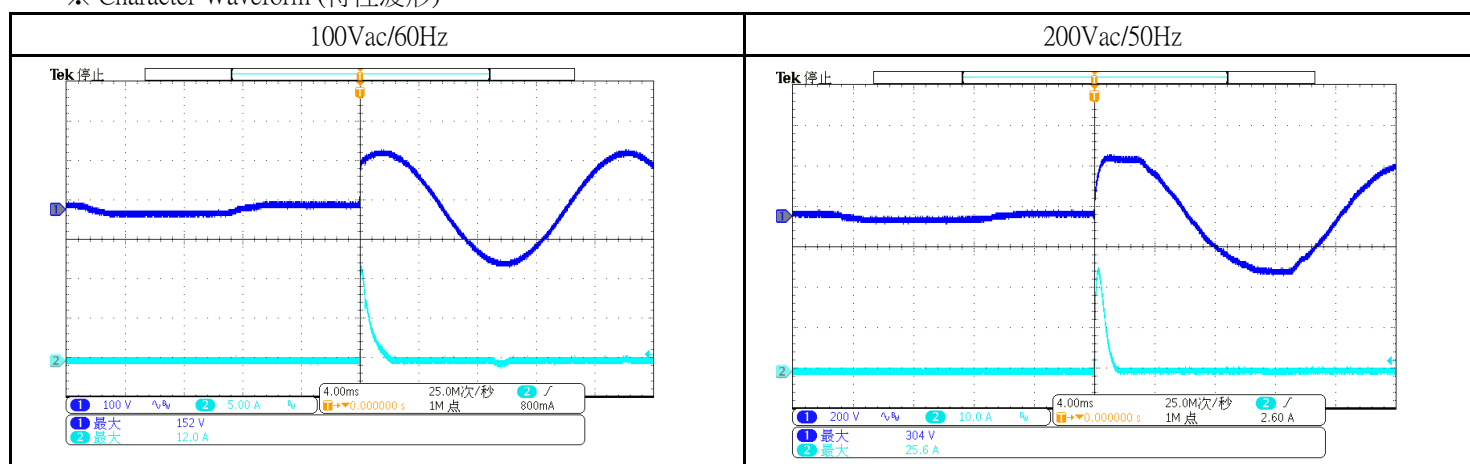
※ Character Condition(特性條件)：

1	I/P Voltage(Vac)(輸入電壓)	100Vac/200Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz /60Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據)：

Inrush Current		
<div> <div>O/P</div> <div>I/P</div> </div>	Full Load	Full Load
	100Vac/60Hz	200Vac/50Hz
Character Result	12.0A	25.6A

※ Character Waveform (特性波形)：



1-9.Turn On Delay(開機爬升延遲時間)

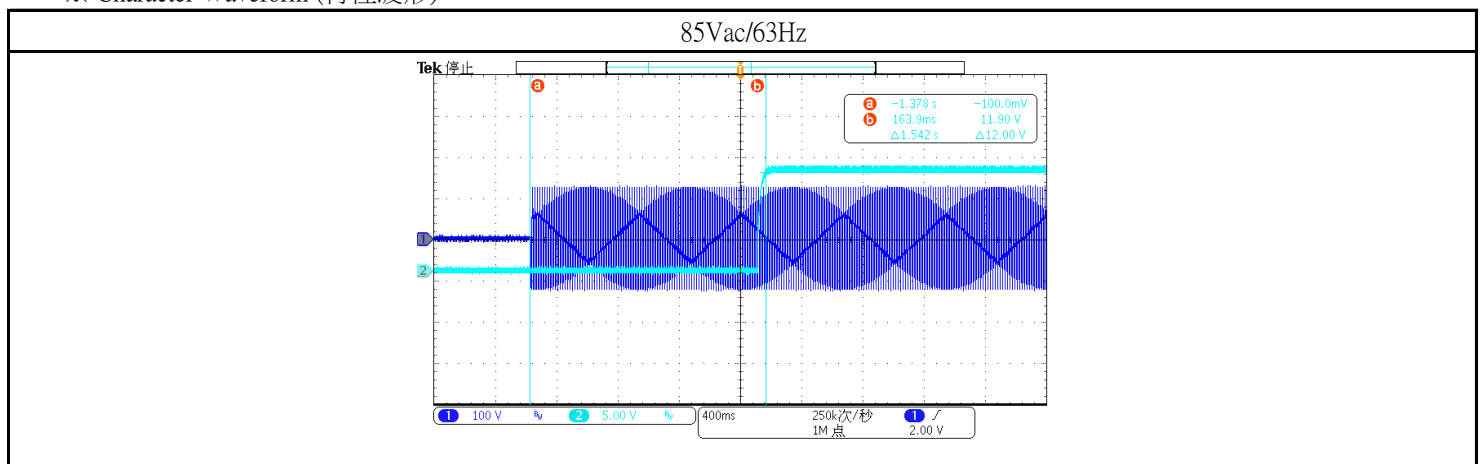
※ Character Condition(特性條件)：

1	I/P Voltage(Vac)(輸入電壓)	85Vac
2	I/P Frequency(Hz)(輸入頻率)	63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據)：

Turn on delay time	
I/P	85Vac/63Hz
Character Result	1.542S

※ Character Waveform (特性波形)：



2-1. Hold Up Time Character (保持時間)

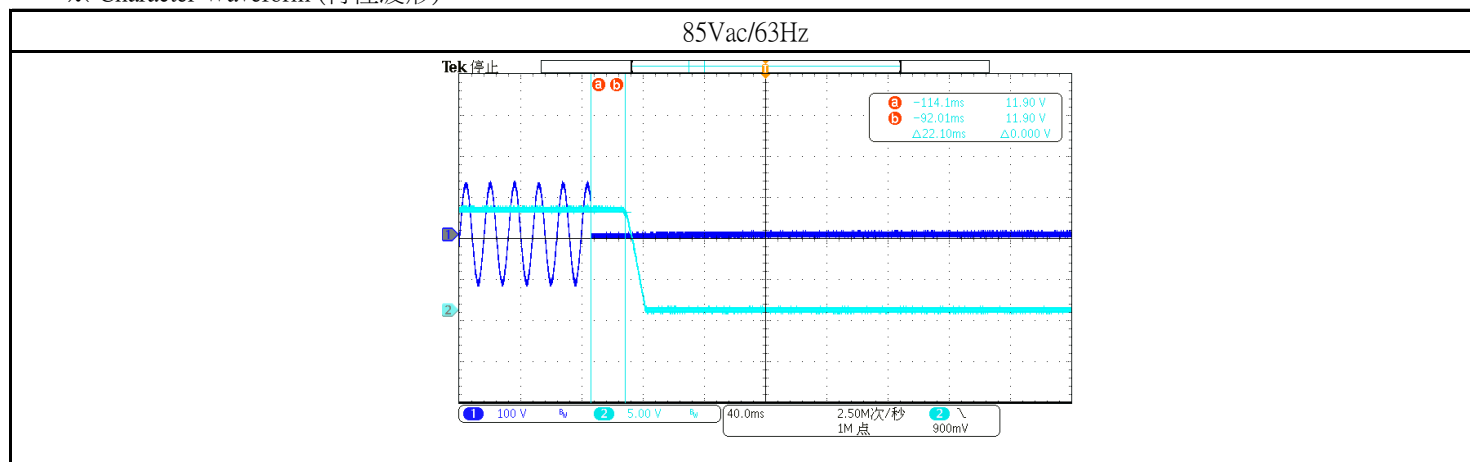
※ Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	85Vac
2	I/P Frequency(Hz)(輸入頻率)	63Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據) :

Hold up time	
I/P	85Vac/63Hz
Character Result	22.1mS

※ Character Waveform (特性波形) :



2-2. Low Vac Shut Off (輸入欠壓關斷特性)

※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	0~85Vac
2	I/P Frequency(Hz)(輸入頻率)	60Hz
3	Output Load(輸出負載)	Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

LOW Vac SHUT OFF	
0~85Vac Input	
O/P	Full Load
Brown in	70.0V
85~0Vac Input	
O/P	Full Load
Brown out	64.0V

2-3. Over Shoot(過沖特性)

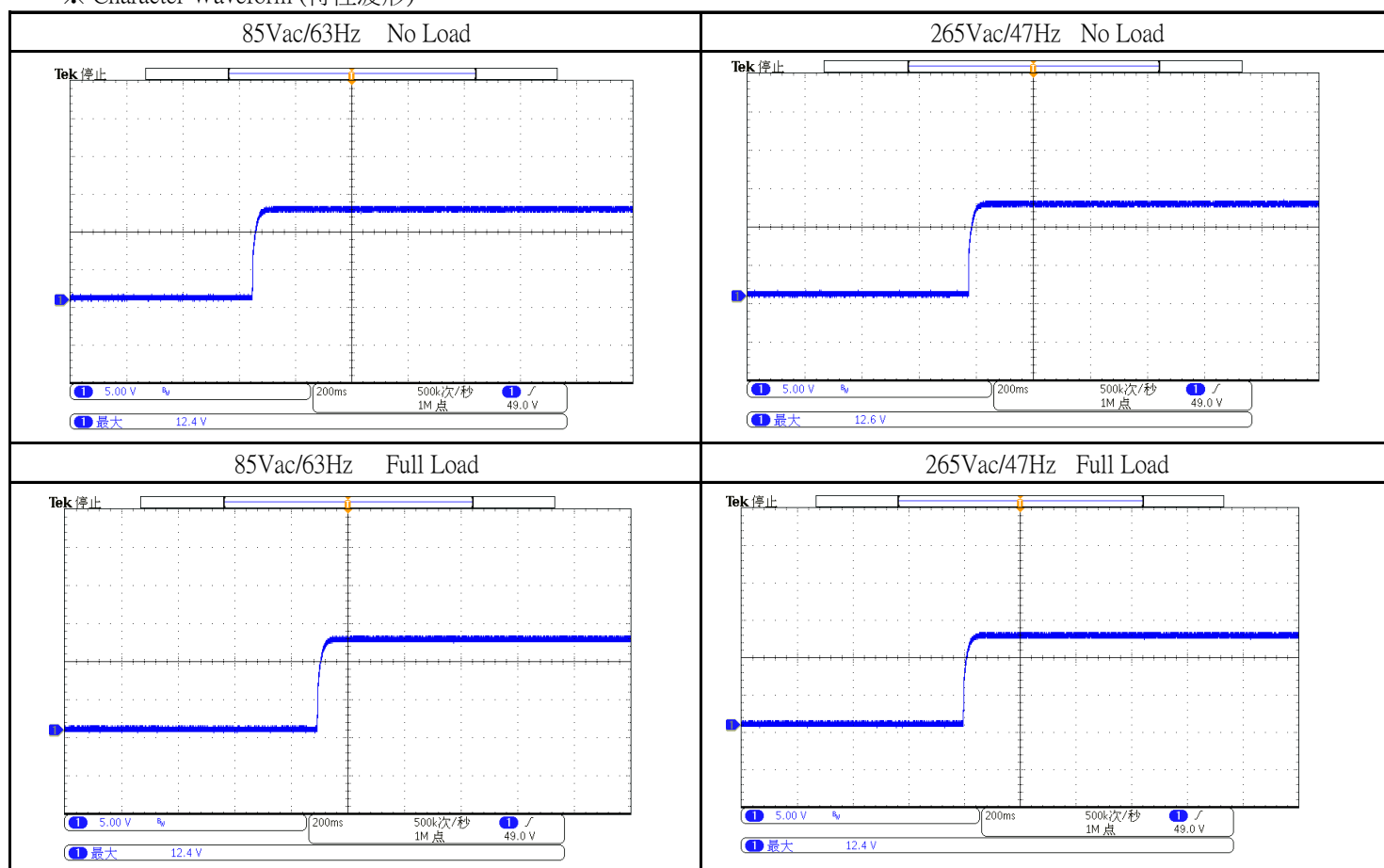
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	No Load/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Over Shoot				
O/P	No Load		Full Load	
I/P	85Vac/63Hz	265Vac/47Hz	85Vac/63Hz	265Vac/47Hz
Character Result	12.4V	12.6V	12.4V	12.4V

※ Character Waveform (特性波形):



2-4.Under Shoot(下冲特性)

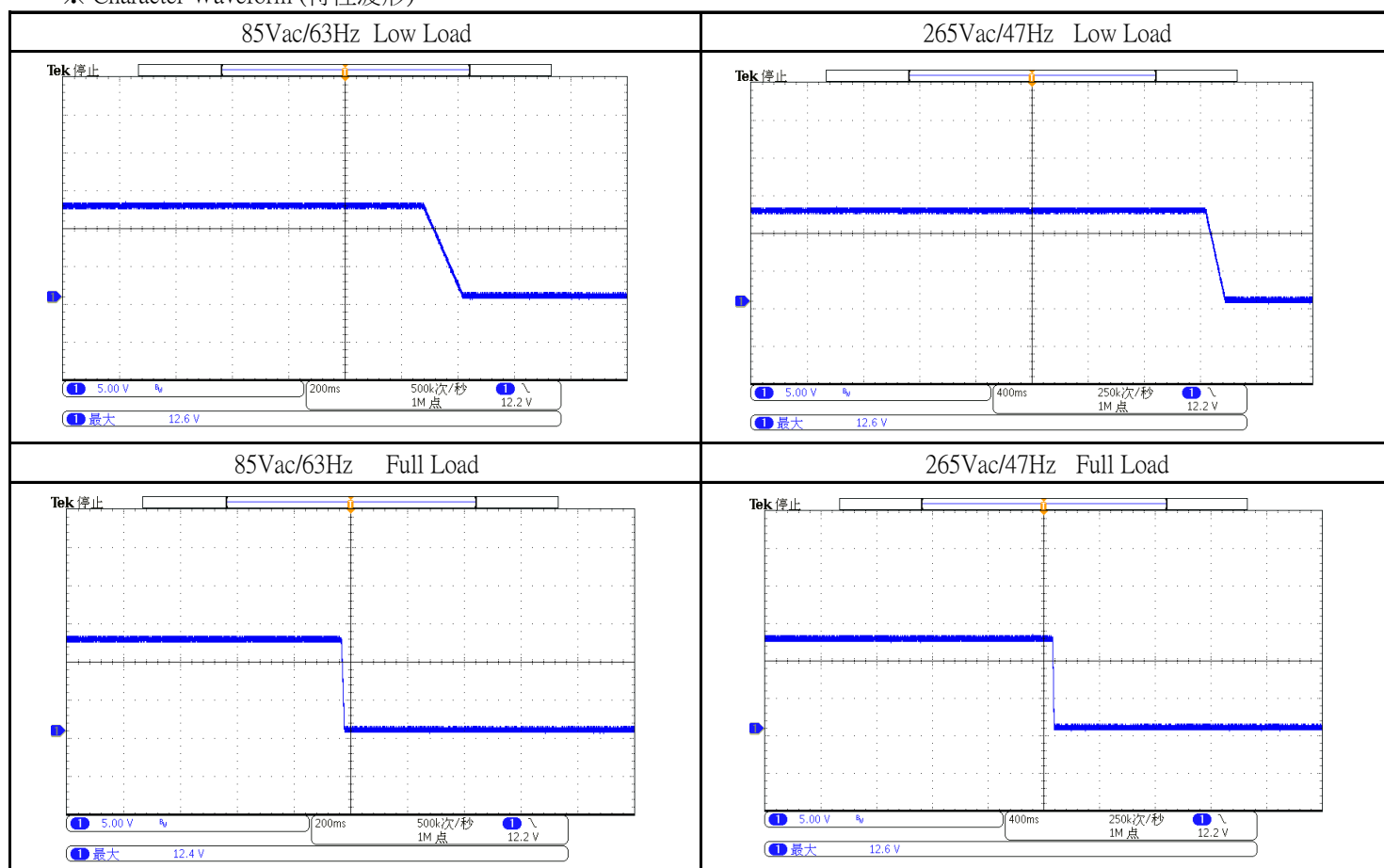
※ Character Condition(特性條件):

1	I/P Voltage(Vac)(輸入電壓)	85Vac/265Vac
2	I/P Frequency(Hz)(輸入頻率)	47Hz /63Hz
3	Output Load(輸出負載)	Low/Full Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS

※ Character Data(特性數據):

Under Shoot				
O/P	0.1A		Full Load	
I/P	85Vac/63Hz	265Vac/47Hz	85Vac/63Hz	265Vac/47Hz
Character Result	12.6V	12.6V	12.4V	12.6V

※ Character Waveform (特性波形):



2-5.Leak Current(漏電流特性)

※Character Condition(特性條件) :

1	I/P Voltage(Vac)(輸入電壓)	265Vac
2	I/P Frequency(Hz)(輸入頻率)	50Hz
3	Output Load(輸出負載)	No Load
4	Ambient Temp.(°C)(環境溫度)	25°C
5	Sample Size(取樣數)	1PCS
6		

※Character Equipment(特性設備) :

ITEM	Equipment Item(設備)	Model No. / Manufacturer(製造商和型號)
1	Leak current Characterer(泄漏電流特性儀)	VG2301
2		
3		
4		

LEAK CURRENT CHARACTER

Spec.(mA MAX)	0.5
O/P	No Load
I/P	265Vac

※Character Data :

SINGLE-PHASE EQUIPMENT

The Character was made in all combinations to the normal and reverse polarity of the supply circuit(Polarity Switch P1)

Terminal A (Switch"s") of Measuring Instrument Connected to:	Switch"e" Position	Touch Current (mA r.m.s.)				
		Polarity P1/Primary Switch Condition				
		Normal/On	Normal/Off	Reverse/On	Reverse/Off	Judgement
Output	Closed	0.07	-	0.065	-	Pass

- ☐ The touch current [did not] exceed _____ mA r.m.s with terminal A connected to the earth terminal of the unit with Switch "e" opened.
- ☒ The touch current [did not] exceed 0.5 mA r.m.s with terminal A connected to the earth terminal of the unit with Switch "e" closed.