



TEST DATA OF LEA100F-48

(200V INPUT)

Regulated DC Power Supply
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COSEL CO.,LTD.

CONTENTS

1. Line Regulation	1
静的入力変動	
2. Input Current (by Load Current)	2
入力電流 (負荷特性)	
3. Input Power (by Load Current)	3
入力電力 (負荷特性)	
4. Efficiency (by Input Voltage)	4
効率 (入力電圧特性)	
5. Efficiency (by Load Current)	5
効率 (負荷特性)	
6. Power Factor (by Input Voltage)	6
力率 (入力電圧特性)	
7. Power Factor (by Load Current)	7
力率 (負荷特性)	
8. Hold-Up Time	8
出力保持時間	
9. Instantaneous Interruption Compensation	9
瞬時停電保障	
10. Load Regulation	10
静的負荷変動	
11. Ripple Voltage (by Load Current)	11
リップル電圧 (負荷特性)	
12. Ripple-Noise	12
リップルノイズ	
13. Overcurrent Protection	13
過電流保護	
14. Overvoltage Protection	14
過電圧保護	
15. Inrush Current	15
突入電流	
16. Dynamic Load Response	16
動的負荷変動	
17. Rise and Fall Time	17
立上り、立下り時間	
18. Ambient Temperature Drift	18
周囲温度変動	
19. Minimum Input Voltage for Regulated Output Voltage	19
最低レギュレーション電圧	
20. Ripple Voltage (by Ambient Temperature)	20
リップル電圧 (周囲温度特性)	
21. Output Voltage Accuracy	21
定電圧精度	
22. Harmonic Current	22
高調波電流	
23. Leakage Current	24
漏洩電流	
24. Line Noise Tolerance	25
入力雑音耐量	
25. Conducted Emission	26
雑音端子電圧	
26. Figure of Testing Circuitry	27
測定回路図	

(Final Page 28)

Model		LEA100F-48	
Item		Line Regulation 静的入力変動	
Object		+48V2.2A	
1. Graph		2. Values	

Model		LEA100F-48	
Item		Input Current (by Load Current) 入力電流 (負荷特性)	
Object			

1. Graph

—△—

Input Volt. 170V

---□---

Input Volt. 200V

-●-

Input Volt. 264V

Input Current [A]

Model		LEA100F-48		Temperature		25℃																																																				
Item		Input Power (by Load Current) 入力電力（負荷特性）		Testing Circuitry		Figure A																																																				
Object		_____																																																								
1. Graph				2. Values																																																						
<div><div><div>—△—</div><div>Input Volt. 170V</div></div><div><div>---□---</div><div>Input Volt. 200V</div></div><div><div>---○---</div><div>Input Volt. 264V</div></div></div> <div><p>Input Power [W]</p><p>Load Current [A]</p></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Power [W]</th></tr><tr><th>Input Volt. 170[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>7.0</td><td>7.6</td><td>10.2</td></tr><tr><td>0.40</td><td>30.0</td><td>30.0</td><td>30.4</td></tr><tr><td>0.80</td><td>50.8</td><td>50.7</td><td>50.7</td></tr><tr><td>1.20</td><td>72.0</td><td>71.7</td><td>71.4</td></tr><tr><td>1.60</td><td>93.0</td><td>92.5</td><td>91.9</td></tr><tr><td>2.00</td><td>114.5</td><td>113.8</td><td>112.9</td></tr><tr><td>2.20</td><td>124.9</td><td>124.2</td><td>123.2</td></tr><tr><td>2.42</td><td>136.8</td><td>136.2</td><td>135.0</td></tr><tr><td>--</td><td>--</td><td>--</td><td>--</td></tr><tr><td>--</td><td>--</td><td>--</td><td>--</td></tr><tr><td>--</td><td>--</td><td>--</td><td>--</td></tr></table>				Load Current [A]	Input Power [W]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	7.0	7.6	10.2	0.40	30.0	30.0	30.4	0.80	50.8	50.7	50.7	1.20	72.0	71.7	71.4	1.60	93.0	92.5	91.9	2.00	114.5	113.8	112.9	2.20	124.9	124.2	123.2	2.42	136.8	136.2	135.0	--	--	--	--	--	--	--	--	--	--	--	--
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<p>Note: Slanted line shows the range of the rated load current.</p> <p>(注) 斜線は定格負荷電流範囲を示す。</p>																																																										

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Model		LEA100F-48	
Item		Efficiency (by Input Voltage) 効率 (入力電圧特性)	
Object			

1. Graph

Load 50%

Load 100%

Efficiency [%]

100

96

92

88

84

80

76

72

140

180

220

260

300

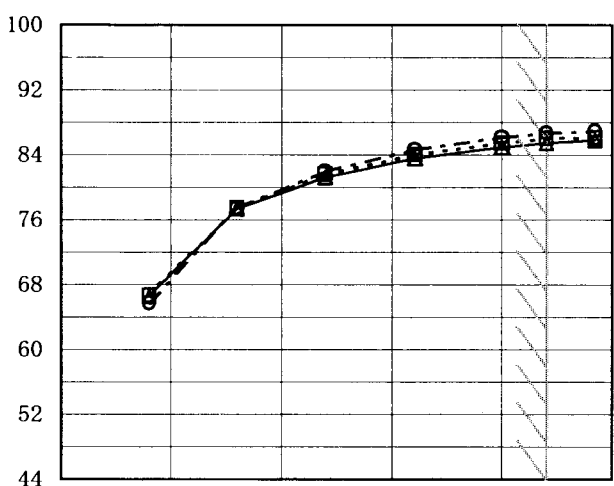
Input Voltage [V]

Note: Slanted line shows the range of the rated input voltage.

(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
150	80.0	84.8
160	80.2	85.2
170	80.4	85.4
180	80.4	85.7
200	80.6	86.1
220	80.9	86.3
240	81.0	86.6
264	81.0	86.3
280	77.3	86.7

Model		LEA100F-48		Temperature		25℃																																																				
Item		Efficiency (by Load Current) 効率 (負荷特性)		Testing Circuitry		Figure A																																																				
Object																																																										
1. Graph		<div><div>—△—</div>Input Volt. 170V</div> <div><div>---□---</div>Input Volt. 200V</div> <div><div>-·○-·-</div>Input Volt. 264V</div>		2. Values																																																						
<div><div>Efficiency [%]</div><div></div><div><div>0.0</div><div>1.0</div><div>2.0</div></div><div><div>Load Current [A]</div></div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 170[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.00</td><td>—</td><td>—</td><td>—</td></tr><tr><td>0.40</td><td>66.6</td><td>66.7</td><td>65.7</td></tr><tr><td>0.80</td><td>77.3</td><td>77.5</td><td>77.5</td></tr><tr><td>1.20</td><td>81.2</td><td>81.6</td><td>82.0</td></tr><tr><td>1.60</td><td>83.6</td><td>84.1</td><td>84.7</td></tr><tr><td>2.00</td><td>85.0</td><td>85.5</td><td>86.2</td></tr><tr><td>2.20</td><td>85.5</td><td>86.0</td><td>86.7</td></tr><tr><td>2.42</td><td>85.8</td><td>86.2</td><td>87.0</td></tr><tr><td>--</td><td>—</td><td>—</td><td>—</td></tr><tr><td>--</td><td>—</td><td>—</td><td>—</td></tr><tr><td>--</td><td>—</td><td>—</td><td>—</td></tr></table>				Load Current [A]	Efficiency [%]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.00	—	—	—	0.40	66.6	66.7	65.7	0.80	77.3	77.5	77.5	1.20	81.2	81.6	82.0	1.60	83.6	84.1	84.7	2.00	85.0	85.5	86.2	2.20	85.5	86.0	86.7	2.42	85.8	86.2	87.0	--	—	—	—	--	—	—	—	--	—	—	—
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Model		LEA100F-48	
Item		Power Factor (by Input Voltage) 力率 (入力電圧特性)	
Object			

1. Graph

---□--- Load 50%

—△— Load 100%

Power Factor

Input Voltage [V]

Note: Slanted line shows the range of the rated input voltage.

(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
150	0.929	0.966
160	0.920	0.960
170	0.910	0.956
180	0.900	0.949
200	0.882	0.936
220	0.860	0.922
240	0.838	0.907
264	0.811	0.894
280	0.518	0.651

COSEL

Model		LEA100F-48	
Item		Power Factor (by Load Current) 力率 (負荷特性)	
Object			

1. Graph

—△— Input Volt. 170V

- - □ - - Input Volt. 200V

- · ○ - · Input Volt. 264V

Power Factor

1.0

0.9

0.8

0.7

0.6

0.5

0.4

0.0

0.0

1.0

2.0

Load Current [A]

2. Values

Load Current [A]	Power Factor		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	0.526	0.461	0.385
0.40	0.817	0.769	0.662
0.80	0.882	0.848	0.765
1.20	0.916	0.888	0.822
1.60	0.937	0.912	0.856
2.00	0.949	0.930	0.881
2.20	0.954	0.936	0.890
2.42	0.959	0.943	0.900
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Note: Slanted line shows the range of the rated load current.

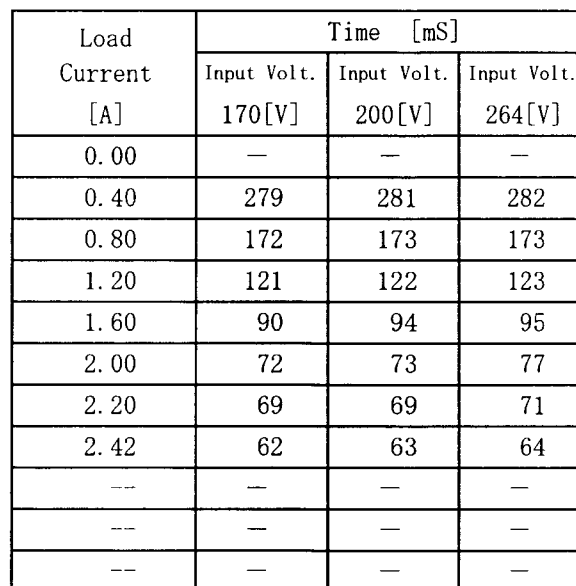
(注) 斜線は定格負荷電流範囲を示す。

Model		LEA100F-48	
Item		Hold-Up Time 出力保持時間	
Object		+48V2.2A	
1. Graph		2. Values	

<

Temperature	25°C
Testing Circuitry	Figure A

2. Values



(注) 斜線は定格負荷電流範囲を示す。

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Model		LEA100F-48	
Item		Load Regulation 静的負荷変動	
Object		+48V2.2A	

1. Graph

—△—

Input Volt. 170V

---□---

Input Volt. 200V

---○---

Input Volt. 264V

Output Voltage [V]

48.40

48.30

48.20

48.10

48.00

47.90

47.80

47.70

0.0

1.0

2.0

Load Current [A]

2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.00	48.080	48.080	48.080
0.40	48.067	48.066	48.066
0.80	48.060	48.060	48.060
1.20	48.057	48.057	48.057
1.60	48.055	48.055	48.055
2.00	48.053	48.053	48.053
2.20	48.052	48.052	48.052
2.42	48.052	48.051	48.051
--	--	--	--
--	--	--	--

Note: Slanted line shows the range of the rated load current.

(注) 斜線は定格負荷電流範囲を示す。

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Model		LEA100F-48	
Item		Ripple Voltage (by Load Current) リップル電圧 (負荷特性)	
Object		+48V2. 2A	

1. Graph

—△—

Input Volt. 170V

- - -○- - -

Input Volt. 264V

Ripple Voltage [mV]

150

125

100

75

50

25

0

0

1

2

Load Current [A]

Ripple Voltage is shown as p-p in the figure below.

Note: Slanted line shows the range of the rated load current.

リップル電圧は、下図 p - p 値で示される。

(注) 斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line

入力商用周期

T2: Due to Switching

スイッチング周期

Ripple [mVp-p]

T2

T1

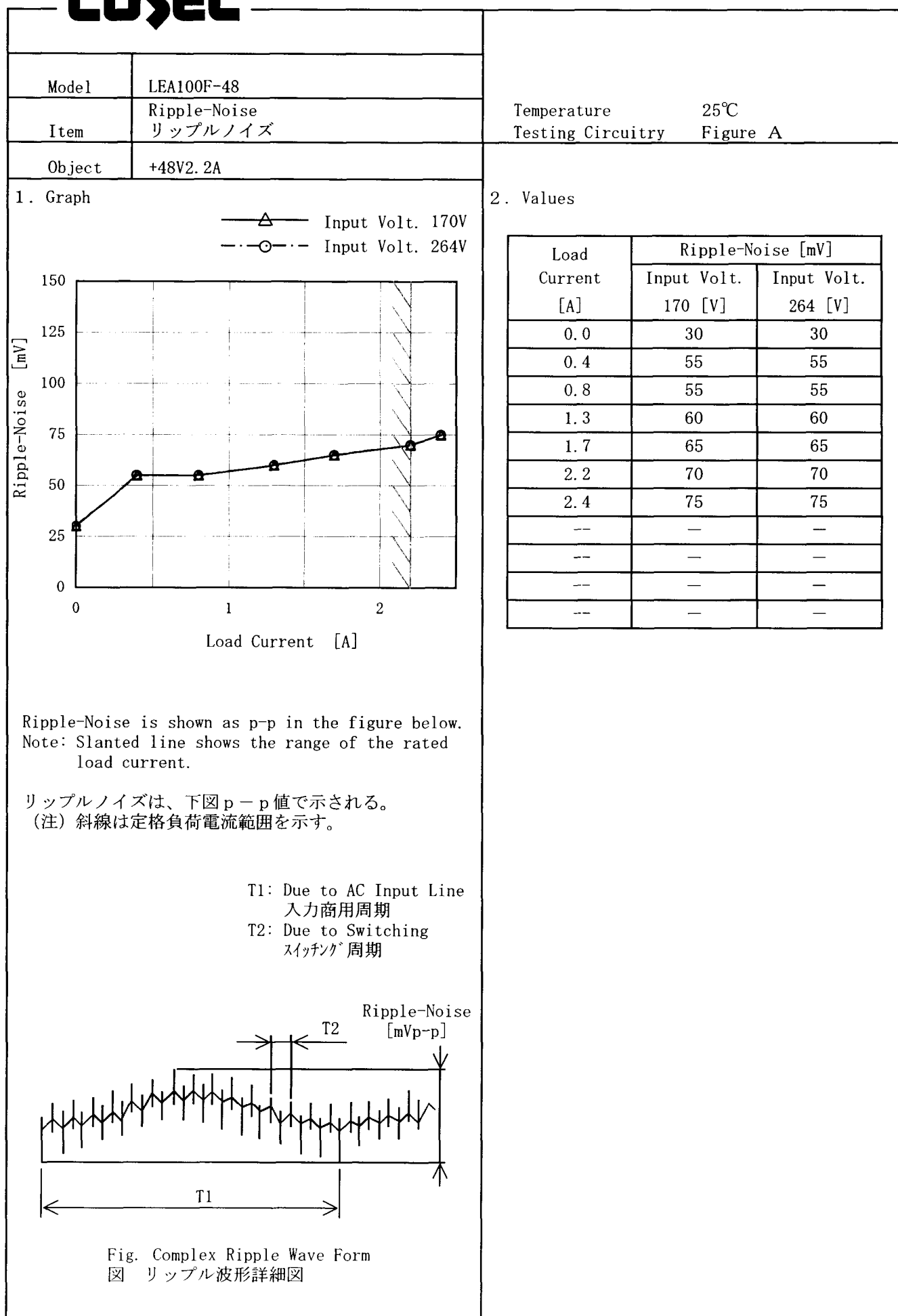
Fig. Complex Ripple Wave Form

図 リップル波形詳細図

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 170 [V]	Input Volt. 264 [V]
0.0	15	15
0.4	30	30
0.8	35	35
1.3	35	35
1.7	40	40
2.2	45	45
2.4	50	50
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--	—	—
--	—	—
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COSEL



COSEL

Model		LEA100F-48		Temperature		25℃																																																												
Item		Overcurrent Protection 過電流保護		Testing Circuitry		Figure A																																																												
Object		+48V2.2A																																																																
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<p>Note: Slanted line shows the range of the rated load current.</p> <p>(注) 斜線は定格負荷電流範囲を示す。</p>																																																																		
<p>Intermittent operation occurs when the output voltage is from 28V to 0V.</p> <p>28V～0V間は、間欠モードとなる。</p>																																																																		

1. Graph

—△— Input Volt. 170V
---□--- Input Volt. 200V
-·-○-·- Input Volt. 264V

Operating Point [V]

Ambient Temperature [°C]

Load 0%

Note: Slanted line shows the range of the rated ambient temperature.

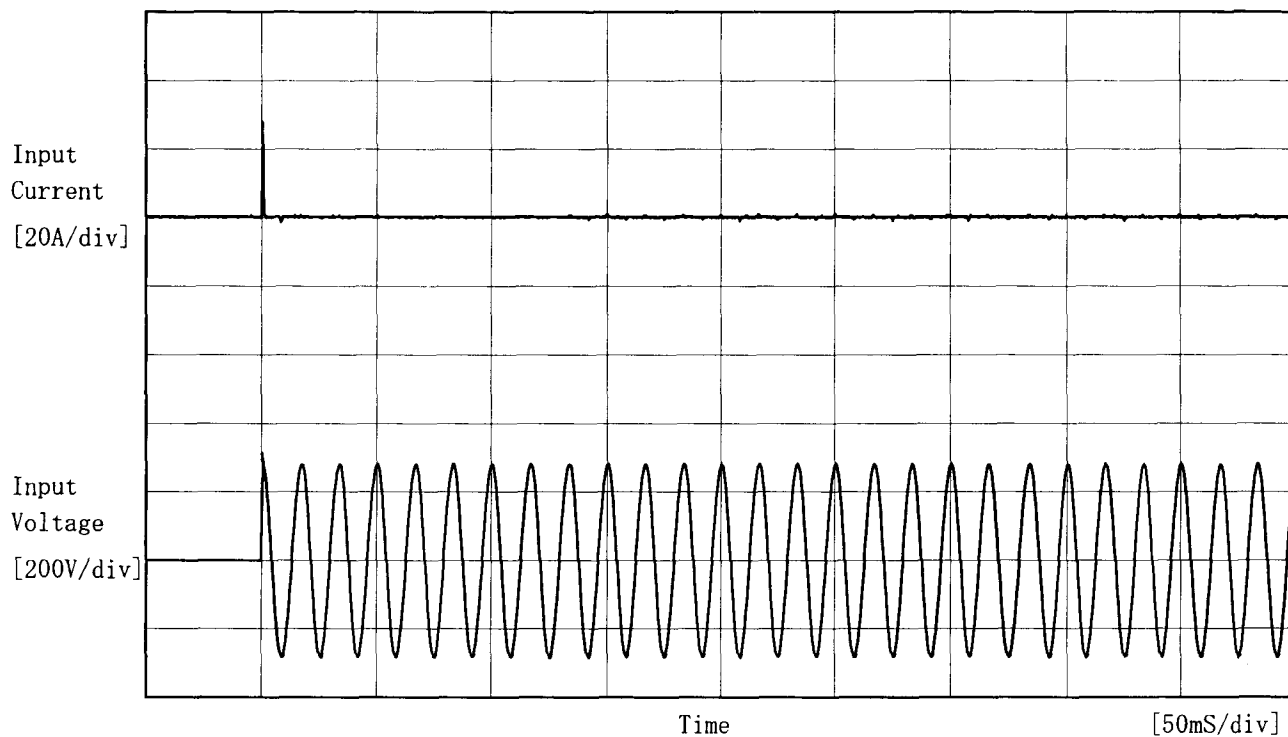
(注) 斜線は定格周囲温度範囲を示す。

2. Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
-20	59.30	59.30	59.30
-10	59.87	59.87	59.87
0	60.36	60.36	60.36
10	60.93	60.93	60.93
20	61.49	61.49	61.49
25	61.78	61.78	61.78
30	61.99	61.99	61.99
40	62.55	62.55	62.55
50	63.12	63.12	63.12
60	63.61	63.61	63.61
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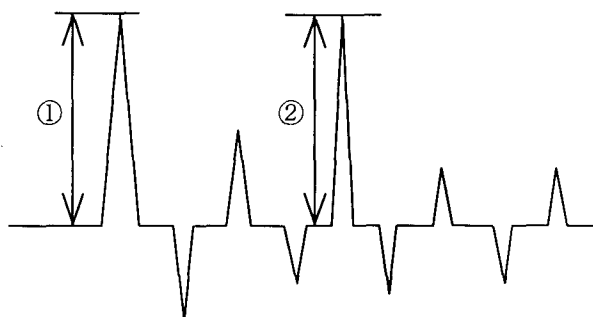
COSEL

Model	LEA100F-48	Temperature 25°C Testing Circuitry Figure A	
Item	Inrush Current 突入電流		
Object	_____		



Input Voltage 200 V
Frequency 60 Hz
Load 100 %
Inrush Current

- ① 27.9 [A]
② 1.1 [A]

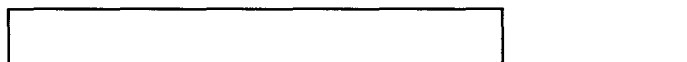


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Model	LEA100F-48	Temperature	25°C
Item	Dynamic Load Response 動的負荷変動	Testing Circuitry	Figure A
Object	+48V2.2A		

Input Volt. 200 V
Cycle 1000 ms

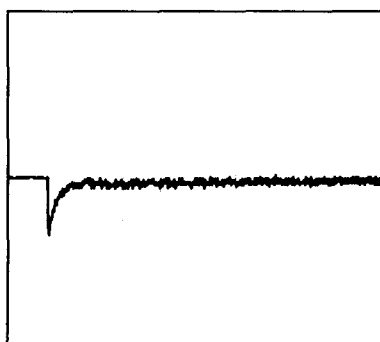
Load Current



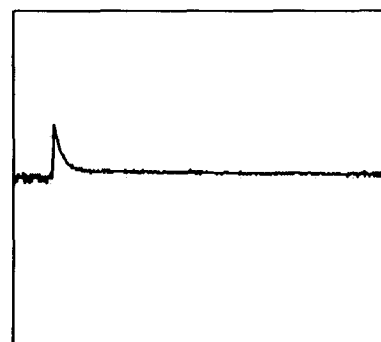
Min. Load (0A) ←→

Load 100% (2.2A)

200 mV/div



20 ms/div

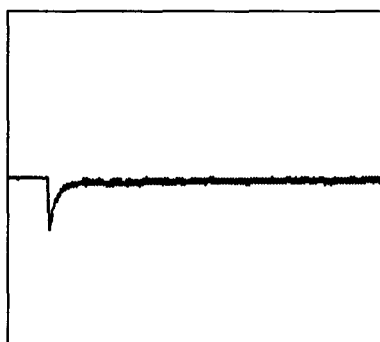


20 ms/div

Min. Load (0A) ←→

Load 50% (1.1A)

200 mV/div



20 ms/div



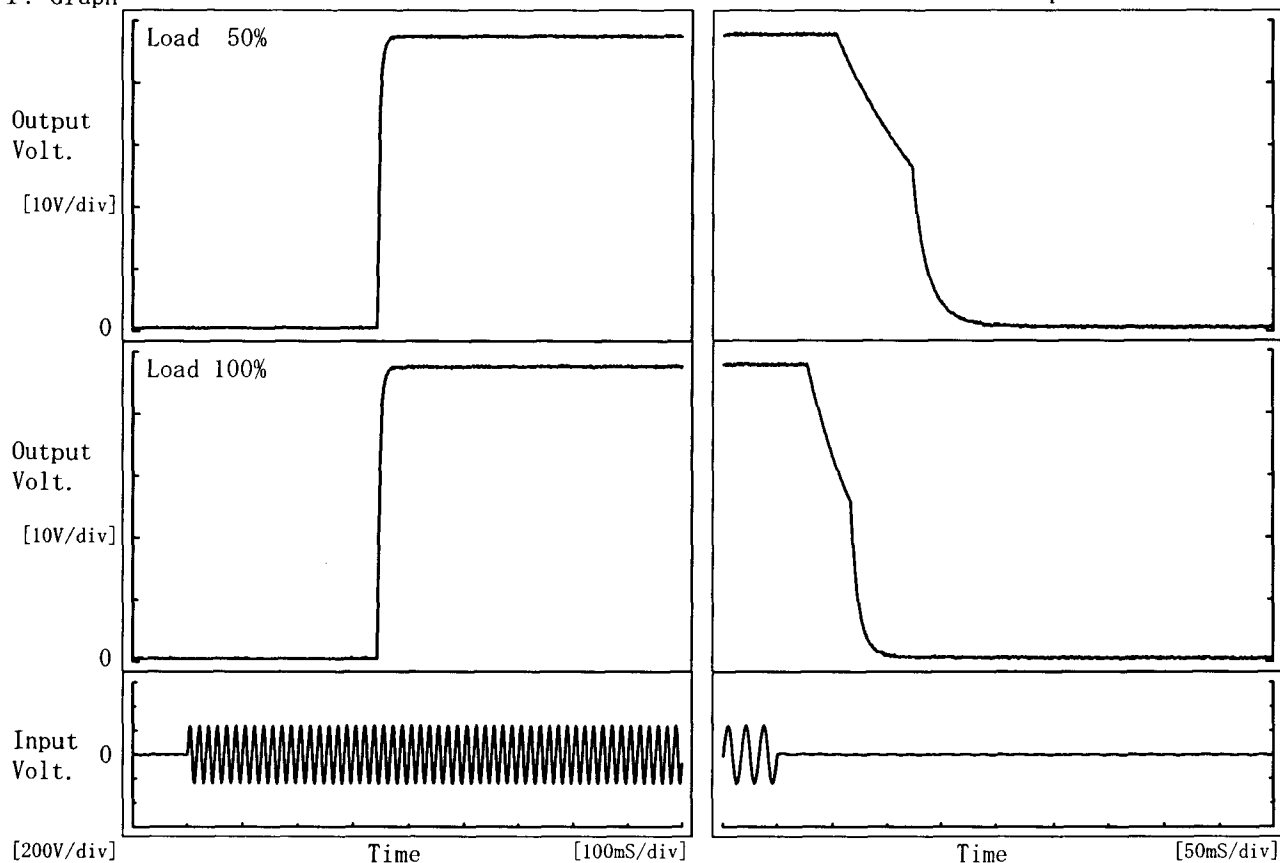
20 ms/div

COSEL

Model	LEA100F-48	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+48V2.2A		

1. Graph

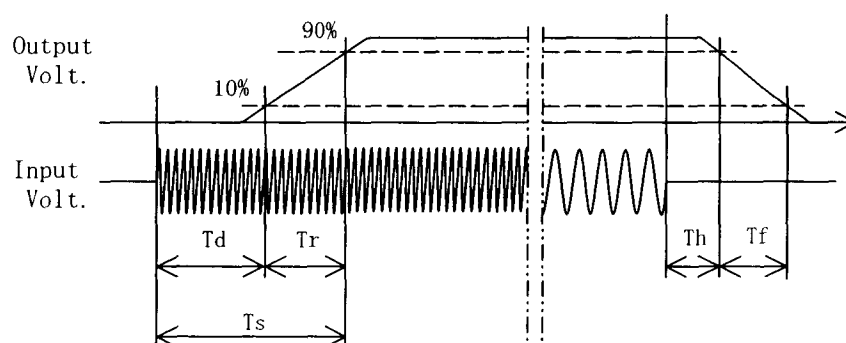
Input Volt. 170 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	344.5	10.0	354.5	63.8	83.8
100 %	344.0	11.0	355.0	31.8	47.5



Testing Circuitry Figure A

2. Values

Load 100%

(注) 斜線は定格周囲温度範囲を示す。

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt.	Input Volt.	Input Volt.
	170[V]	200[V]	264[V]
-20	48.016	48.016	48.016
-10	48.028	48.028	48.028
0	48.042	48.042	48.042
10	48.059	48.059	48.058
20	48.078	48.078	48.078
25	48.089	48.089	48.089
30	48.096	48.096	48.096
40	48.102	48.102	48.102
50	48.104	48.104	48.104
60	48.087	48.087	48.086
--	--	--	--

COSEL

Model

LEA100F-48

Item

Minimum Input Voltage for Regulated Output Voltage
最低レギュレーション電圧

Object

+48V2.2A

1. Graph

---□---

Load 50%

—△—

Load 100%

Input Voltage [V]

100

80

60

40

20

0

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COSEL

Model

LEA100F-48

Item

Ripple Voltage (by Ambient Temp.)
リップル電圧 (周囲温度特性)

Object

+48V2.2A

1. Graph

---□---

Load 50%

—△—

Load 100%

Ripple Voltage [mV]

300

250

200

150

100

50

0

40

20

0

-20

-40

Ambient Temperature [°C]

Input Volt. 200V

Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	190	200
-10	130	140
0	80	100
10	55	60
20	40	45
25	35	45
30	35	45
40	30	40
50	30	40
60	25	35
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Model		LEA100F-48	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+48V2.2A	

1. Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -10 ~ 50°C

Input Voltage : 170 ~ 264V

Load Current : 0 ~ 2.2A

* Output Voltage Accuracy = $\pm (\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage}}{\text{Rated Output Voltage}} \times 100$

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 : -10 ~ 50°C

入力電圧 : 170 ~ 264V

負荷電流 : 0 ~ 2.2A

* 定電圧精度(変動値) = $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

* 定電圧精度(変動率) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

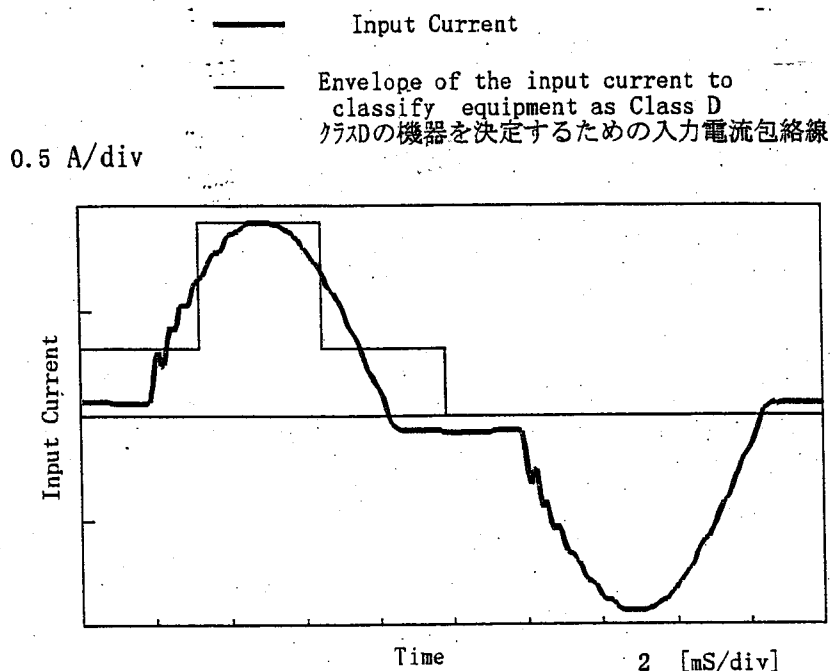
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	264	0	12.072	±17	±0.1
Minimum Voltage	55	170	0.9	12.039		

COSEL

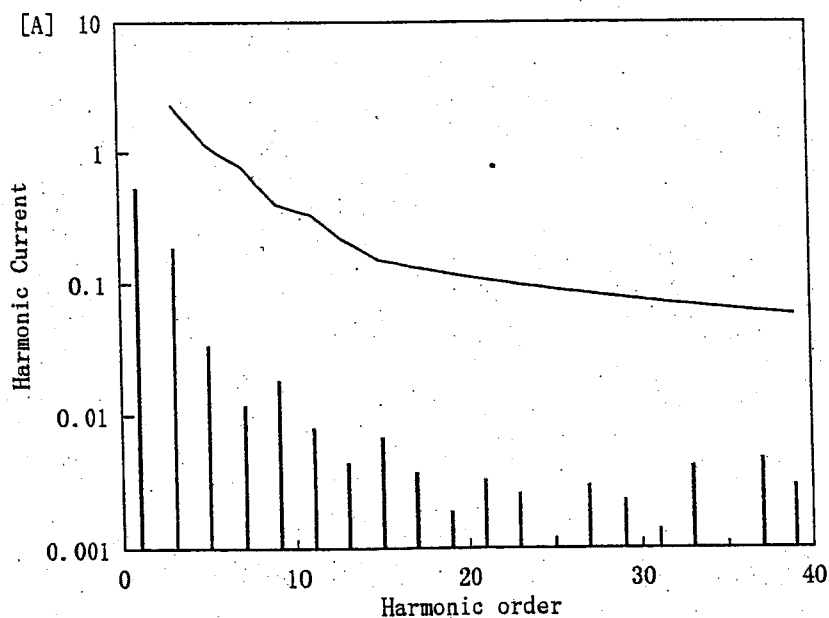
Model	LEA100F-48	Temperature	25°C
Item	Harmonic Current 高調波電流	Testing Circuitry	Figure E
Object			

1. Input Current Waveform



Conditions	Values
Input Voltage [V]	230.4
Input Current [A]	0.572
Active Power [W]	121.7
Apparent Power [VA]	131.8
Frequency [Hz]	50
Power Factor	0.923
Output Power [W]	105.6

2. Harmonic Current



— Harmonic Current
高調波電流

— Limits for Class A equipment
クラスAの機器に対する限度値

Harmonics order 高調波次数	Limits 限度値 [A]	Values 測定値 [A]
1	—	0.53770
2	—	0.00040
3	2.29601	0.18930
4	—	0.00010
5	1.13802	0.03390
6	—	0.00000
7	0.76866	0.01190
8	—	0.00000
9	0.39931	0.01840
10	—	0.00010
11	0.32943	0.00810
12	—	0.00010
13	0.20964	0.00440
14	—	0.00010
15	0.14974	0.00680
16	—	0.00000
17	0.13212	0.00370
18	—	0.00000
19	0.11822	0.00190
20	—	0.00010
21	0.10696	0.00330
22	—	0.00010
23	0.09766	0.00260
24	—	0.00010
25	0.08984	0.00120
26	—	0.00000
27	0.08319	0.00300
28	—	0.00000
29	0.07745	0.00230
30	—	0.00010
31	0.07245	0.00140
32	—	0.00010
33	0.06806	0.00420
34	—	0.00010
35	0.06417	0.00080
36	—	0.00000
37	0.06071	0.00470
38	—	0.00000
39	0.05759	0.00300
40	—	0.00010

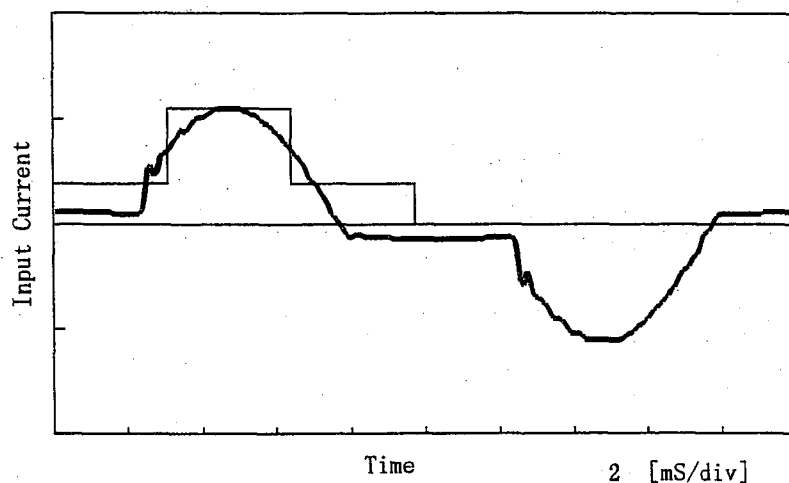
COSEL

Model	LEA100F-48	Temperature	25°C
Item	Harmonic Current 高調波電流	Testing Circuitry	Figure E
Object			

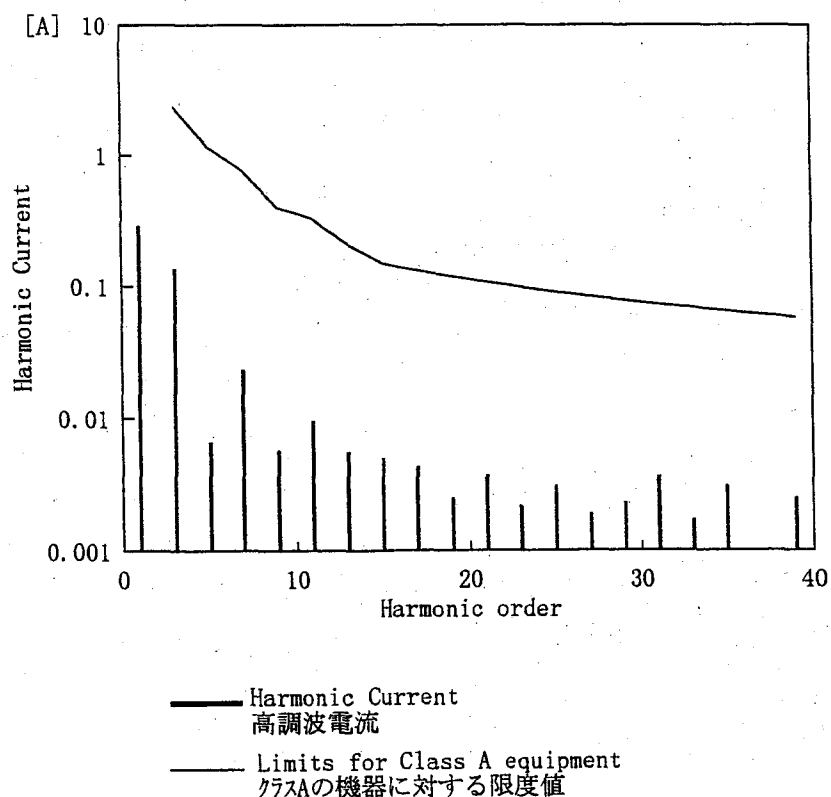
1. Input Current Waveform

— Input Current
— Envelope of the input current to classify equipment as Class D
クラスDの機器を決定するための入力電流包絡線

0.5 A/div



2. Harmonic Current



Conditions	Values
Input Voltage [V]	230.6
Input Current [A]	0.322
Active Power [W]	64.3
Apparent Power [VA]	74.4
Frequency [Hz]	50
Power Factor	0.864
Output Power [W]	52.8

Harmonics order 高調波次数	Limits 限度値 [A]	Values 測定値 [A]
1	—	0.29020
2	—	0.00050
3	2.29402	0.13740
4	—	0.00010
5	1.13703	0.00660
6	—	0.00000
7	0.76800	0.02350
8	—	0.00010
9	0.39896	0.00570
10	—	0.00010
11	0.32914	0.00960
12	—	0.00000
13	0.20945	0.00560
14	—	0.00000
15	0.14961	0.00500
16	—	0.00000
17	0.13201	0.00430
18	—	0.00010
19	0.11811	0.00250
20	—	0.00010
21	0.10686	0.00370
22	—	0.00000
23	0.09757	0.00220
24	—	0.00010
25	0.08977	0.00310
26	—	0.00010
27	0.08312	0.00190
28	—	0.00010
29	0.07738	0.00230
30	—	0.00000
31	0.07239	0.00360
32	—	0.00010
33	0.06800	0.00170
34	—	0.00010
35	0.06412	0.00310
36	—	0.00010
37	0.06065	0.00060
38	—	0.00000
39	0.05754	0.00250
40	—	0.00010

COSEL

		Temperature 25℃ Testing Circuitry Figure B
Model	LEA100F-48	
Item	Leakage Current 漏洩電流	
Object	_____	

1. Results

Standards	Leakage Current [mA]		
	Input Volt.	Input Volt.	Input Volt.
	85 [V]	100 [V]	132 [V]
(A) DEN-AN	—	—	—
(B) IEC60950	—	—	—

Standards	Leakage Current [mA]		
	Input Volt.	Input Volt.	Input Volt.
	170 [V]	230 [V]	264 [V]
(B) IEC60950	0.31	0.43	0.49

2. Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

交流入力の一相について測定し、その大きい方を漏洩電流測定値とする。

COSEL

Model	LEA100F-48			
Item	Line Noise Tolerance 入力雑音耐量	Temperature	25℃	
		Testing Circuitry	Figure C	
Object	+48V2.2A			
1. Conditions				
• Input Voltage : 200 V		• Pulse Input Duration : 1 min. or more		
• Pulse Voltage : 2000 V		• Load : 100 %		
• Pulse Cycle : 10 mS				
2. Results				
Pulse Width [nS]	MODE		No protection failure should occur	DC-like Regulation of Output Voltage
		POLARITY	保護回路の誤動作がない	出力電圧の直流的変動
50	COMMON	+	OK	no fluctuation
		---	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		---	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		---	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		---	OK	no fluctuation

COSEL

Model	LEA100F-48 **	Temperature	25°C
Item	Conducted Emission 雑音端子電圧	Testing Circuitry	Figure D
Object	_____		

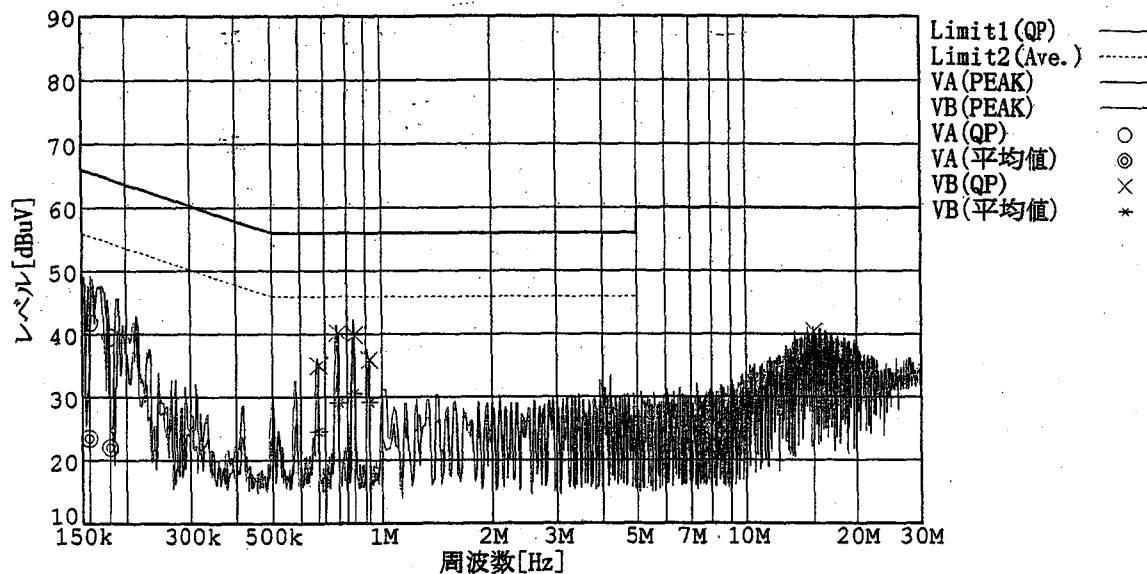
1. Graph

Remarks

Input Volt. 230V (CISPR Pub22 Class B)

Load 100%

規格 1 : [CISPR Pub22] Class B (QP)
 規格 2 : [CISPR Pub22] Class B (平均値)



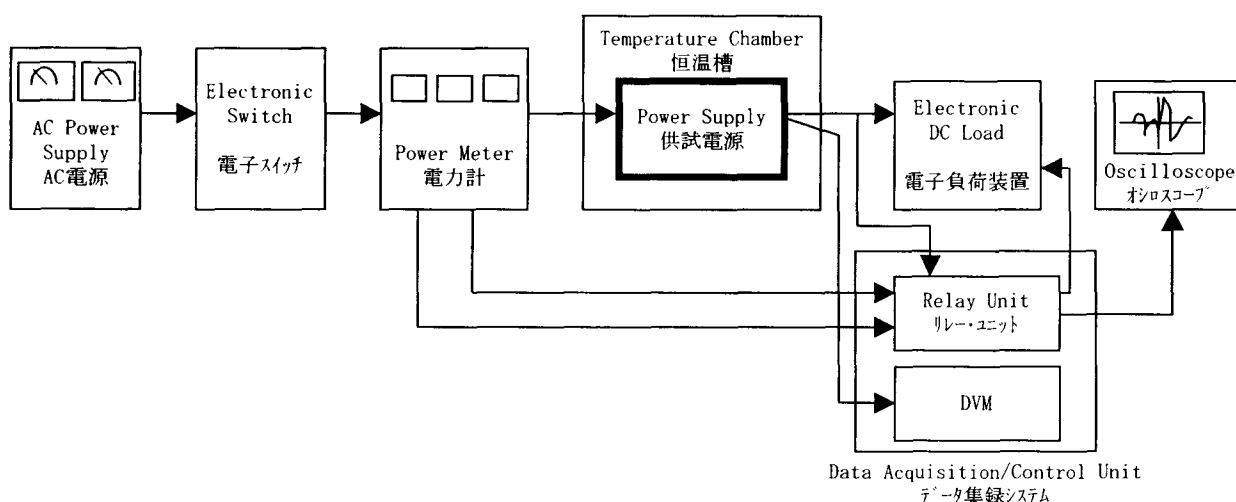


Figure A

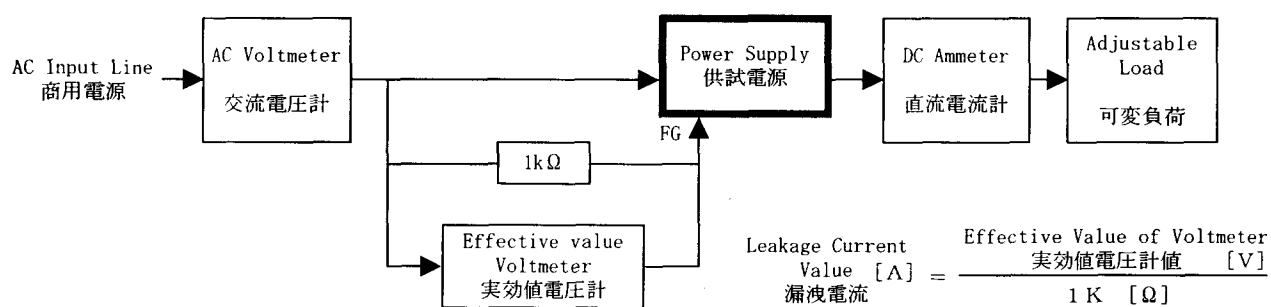


Figure B (DEN-AN)

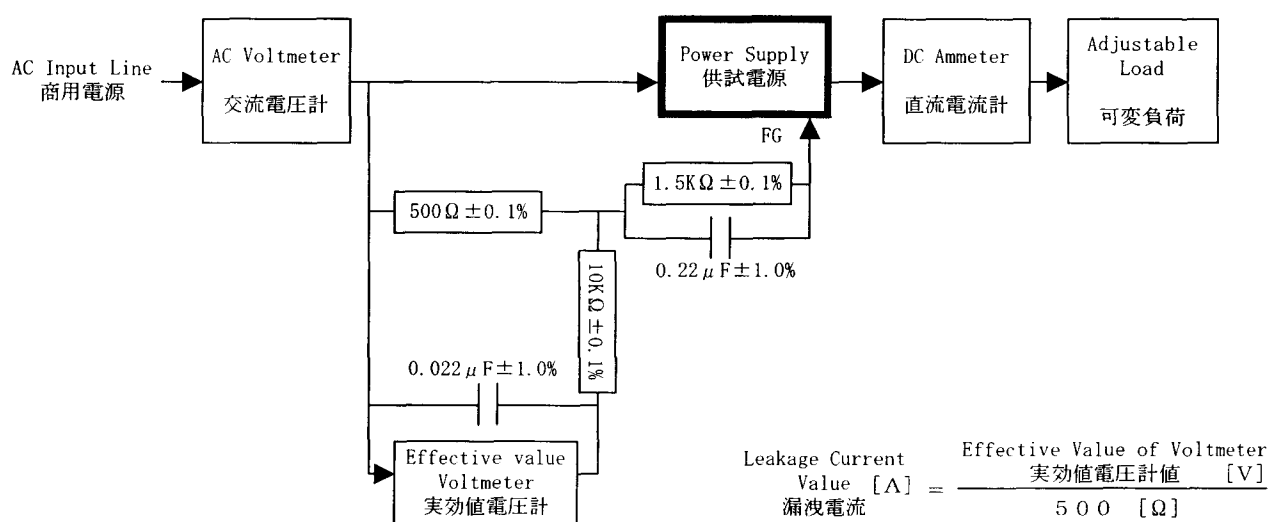


Figure B (IEC60950)

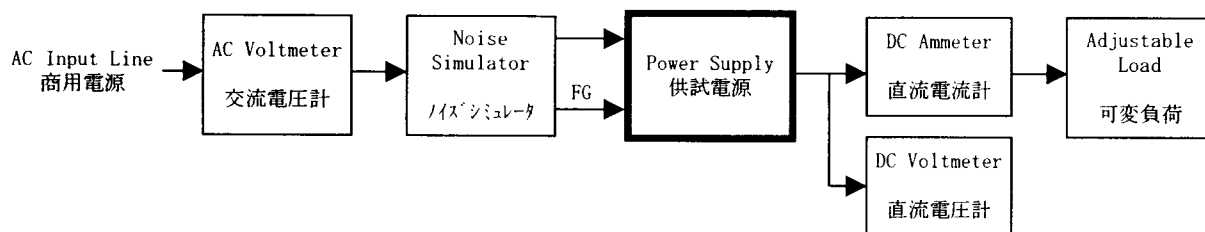


Figure C

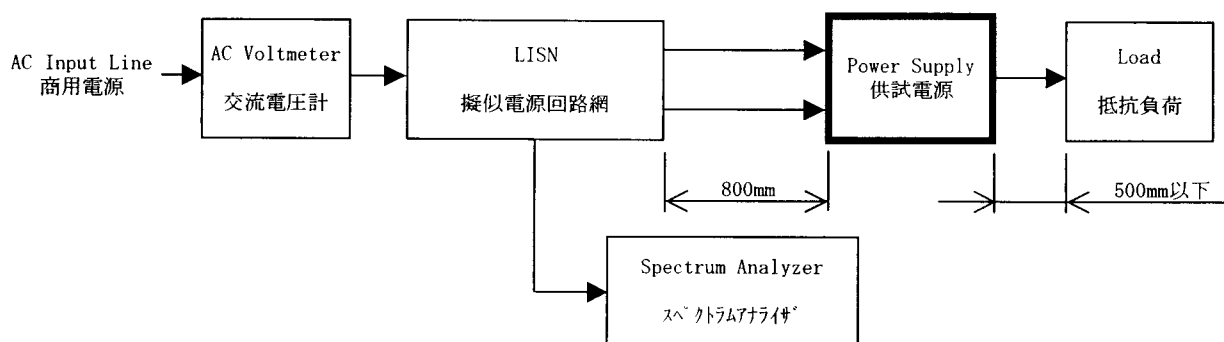


Figure D

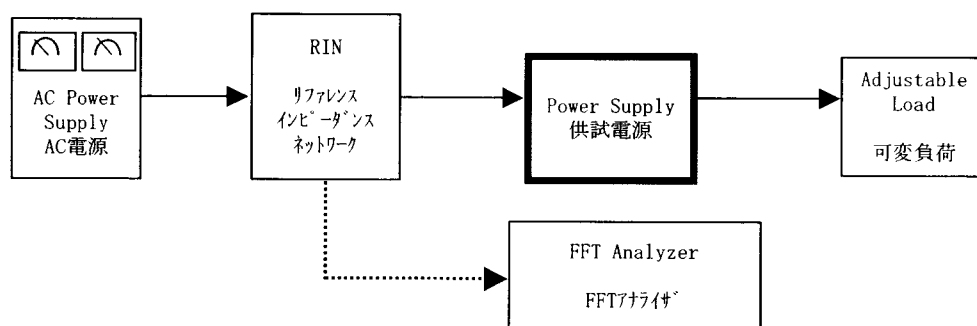


Figure E