

**DRJ120-24-1**

**EVALUATION DATA**

**型式データ**

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## 2. 特性データ Characteristics

### 2.1 静特性 Steady state data

#### (1) 入力・負荷・温度変動／出力起動・遮断電圧

Regulation - line and load, Temperature drift / Start up voltage and Drop out voltage ..... T-5

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### 使用記号 Terminology used

	定義	Definition
$V_{in}$	.....	入力電圧 Input voltage
$V_{out}$	.....	出力電圧 Output voltage
$I_{in}$	.....	入力電流 Input current
$I_{out}$	.....	出力電流 Output current
$T_a$	.....	周囲温度 Ambient temperature
$f$	.....	周波数 Frequency

※ 当社測定条件における結果であり、参考値としてお考え願います。

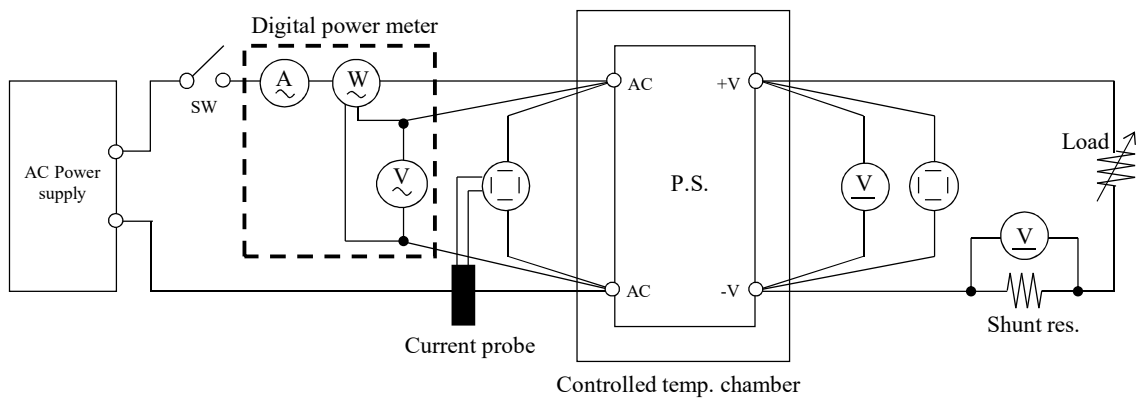
Test results are reference data based on our measurement condition.

1. 測定方法 Evaluation Method

1.1 測定回路 Circuit used for determination

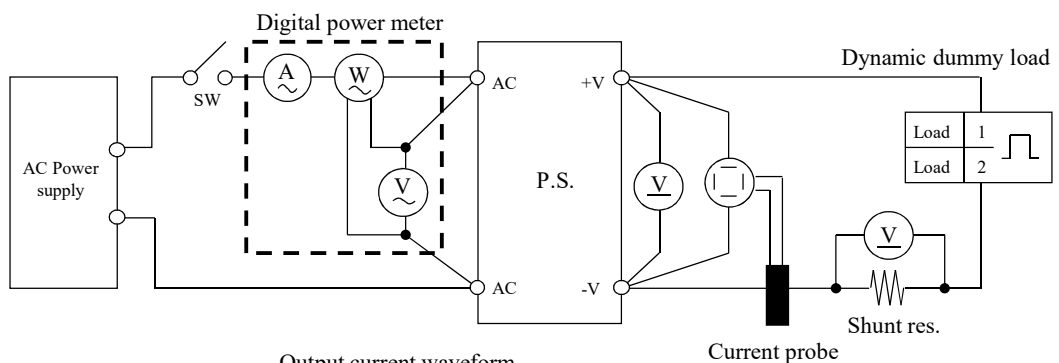
測定回路1 Circuit 1 used for determination

- ・ 静特性 Steady state data
- ・ 過電流保護特性 Over current protection (OCP) characteristics
- ・ 過電圧保護特性 Over voltage protection (OVP) characteristics
- ・ 出力立ち上がり特性 Output rise characteristics
- ・ 出力立ち下がり特性 Output fall characteristics
- ・ 出力保持時間特性 Hold up time characteristics
- ・ 入力電圧瞬停特性 Response to brown out characteristics
- ・ 高調波成分 Input current harmonics
- ・ 入力電流波形 Input current waveform

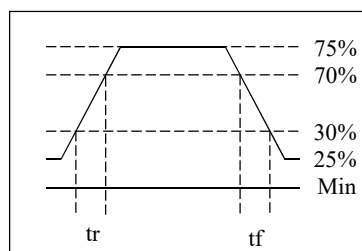


測定回路2 Circuit 2 used for determination

- ・ 過渡応答（負荷急変）特性 Dynamic load response characteristics

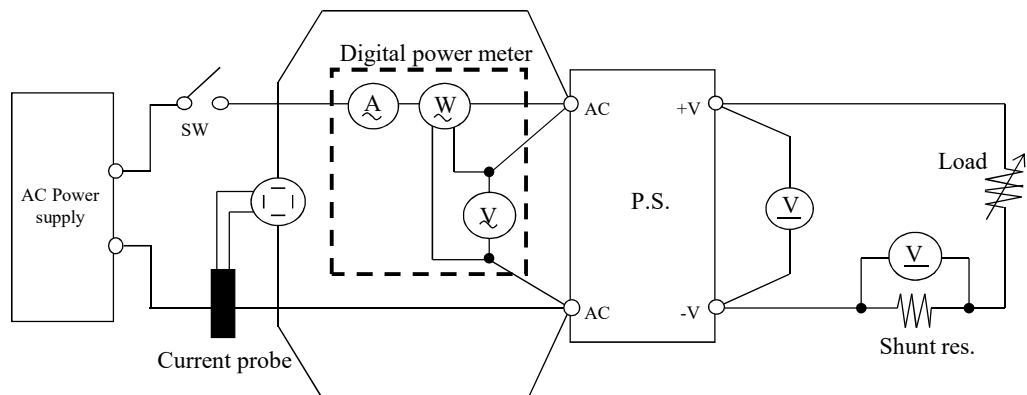


Output current waveform  
Iout 25% <=> 75%



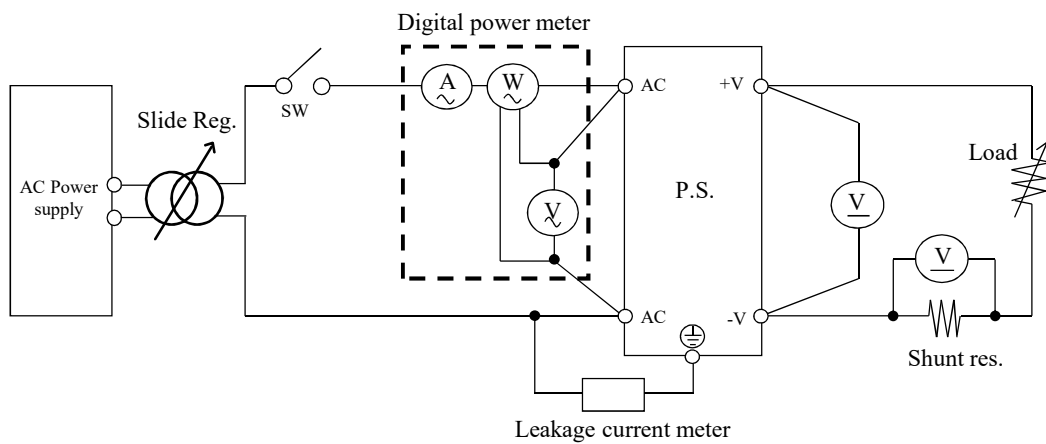
測定回路3 Circuit 3 used for determination

- ・ 入力サージ電流（突入電流） 波形 Inrush current waveform



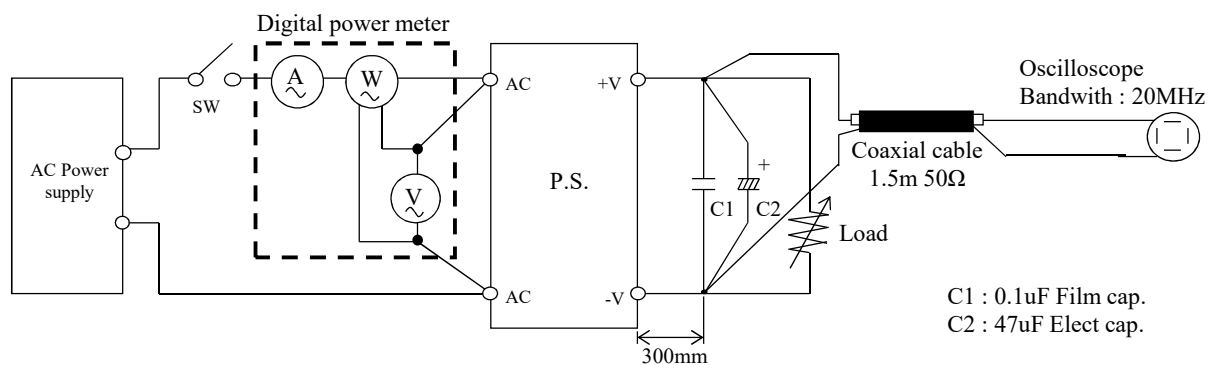
測定回路4 Circuit 4 used for determination

- ・ リーク電流特性 Leakage current characteristics



測定回路5 Circuit 5 used for determination

- ・ 出力リップル、ノイズ波形 Output ripple and noise waveform

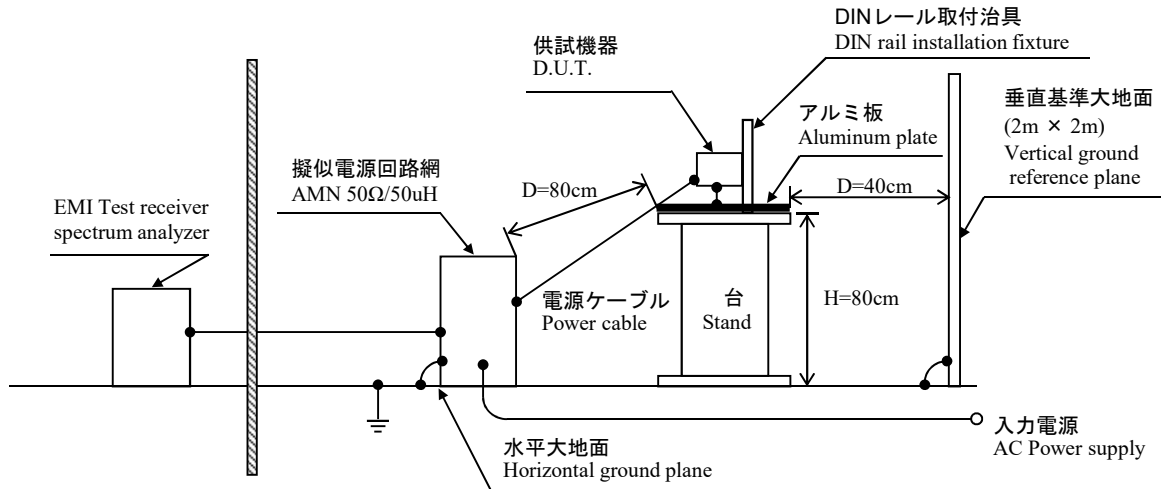


### 測定構成 Configuration used for determination

#### ・ EMI特性 Electro-Magnetic Interference characteristics

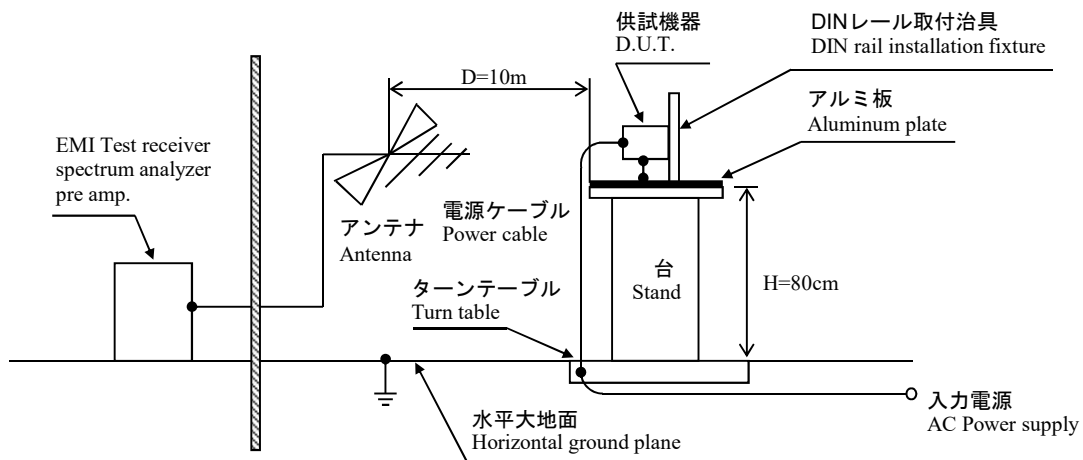
##### (a) 雑音端子電圧 (帰還ノイズ)

##### Conducted Emission



##### (b) 雑音電界強度 (放射ノイズ)

##### Radiated Emission



## 1.2 使用測定機器 List of equipment used

	EQUIPMENT USED	MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA	DL1740/DL1740E
2	DIGITAL MULTIMETER	AGILENT	34970A
3	DIGITAL POWER METER	HIOKI	3333
4	CURRENT PROBE/AMPLIFIER	YOKOGAWA	701931
5	DATA ACQUISITION UNIT	AGILENT	34970A
6	ELECTRONIC LOAD	CHROMA	63112A
7	CONTROLLED TEMP. CHAMBER	ESPEC	SH-641
8	LEAKAGE CURRENT METER	SIMPSON	228
9	AC SOURCE	CHROMA	61505
10	AC SOURCE (CE-UL Lab)	KEYSIGHT TECHNOLOGIES	6813B
11	EMI TEST RECEIVER (CE-UL Lab)	ROHDE & SCHWARZ	ES17
12	LISN (CE-UL Lab)	SCHAFFNER LISN	NNB 41
13	LISN (CE-UL Lab)	EMCO LISN (AE)	3825/2
14	EMI TEST RECEIVER (RE-UL Lab)	ROHDE & SCHWARZ 100Hz-26.5Ghz	ESU26
15	ANTENNA (BILOG) (RE-UL Lab)	TESEQ	CBL6112B
16	ANTENNA (HORN) (RE-UL Lab)	EMCO	3115
17	PRE AMP (RE-UL Lab)	HP	8447D
18	PRE AMP (RE-UL Lab)	TOYO	TPA0108-40

## 2. 特性データ Characteristics

### 2.1 静特性 Steady state data

#### (1) 入力・負荷・温度変動／出力起動・遮断電圧

Regulation - line and load, Temperature drift / Start up voltage and Drop out voltage

24V
-----

#### 1. Regulation - line and load

Condition Ta : 25°C

Iout \ Vin	85VAC	115VAC	230VAC	264VAC	line regulation	
0%	24.097	24.098	24.098	24.097	1mV	0.004%
50%	24.050	24.049	24.049	24.049	1mV	0.004%
100%	24.003	24.003	24.003	24.003	0mV	0.000%
load regulation	94mV	95mV	95mV	94mV		
	0.392%	0.396%	0.396%	0.392%		

#### 2. Temperature drift

Condition Vin : 115VAC

Iout : 100%

Ta	-25°C	25°C	55°C	temperature stability	
Vout	23.981	24.003	24.126	145mV	0.604%

#### 3. Start up voltage and Drop out voltage

Condition Ta : 25°C

Iout : 100%

Start up voltage (Vin)	70VAC
Drop out voltage (Vin)	58VAC

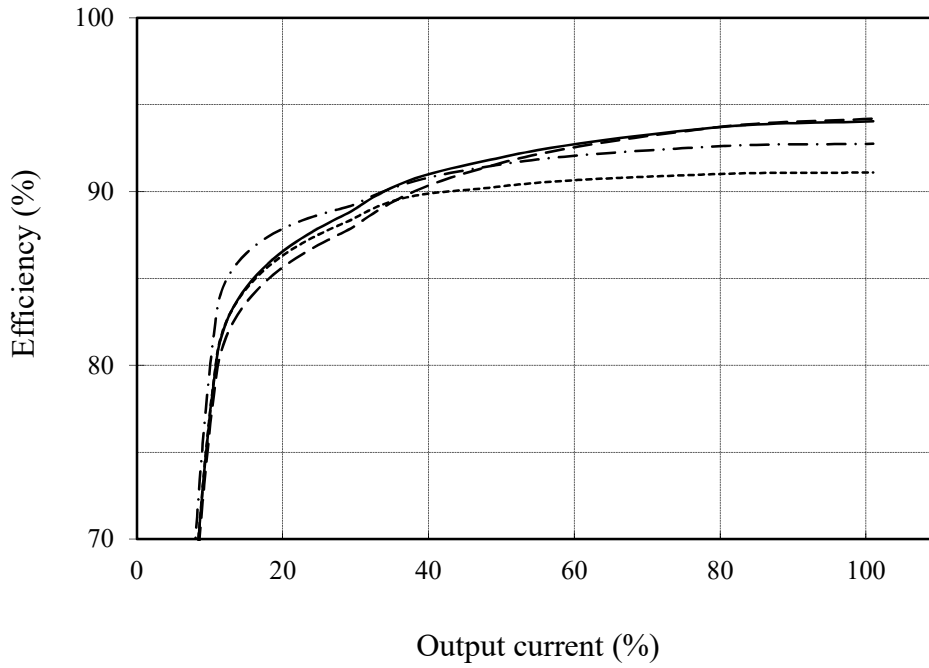


(2) 効率対出力電流

Efficiency vs. Output current

Conditions Vin : 85VAC -----  
 : 115VAC -.-.-.-  
 : 230VAC ————  
 : 264VAC - - - -  
 Ta : 25°C

24V



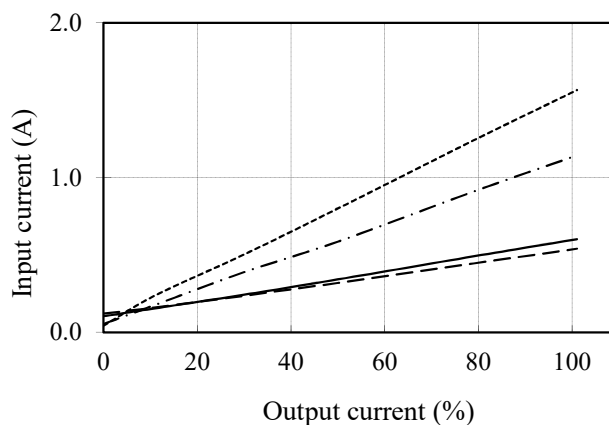
(3) 入力電流対出力電流

Input current vs. Output current

Conditions Vin : 85VAC -----  
 : 115VAC -.-.-.-  
 : 230VAC ————  
 : 264VAC - - - -  
 Ta : 25°C

24V

Vin	Input current
	Iout : 0%
85VAC	0.043A
115VAC	0.054A
230VAC	0.104A
264VAC	0.120A



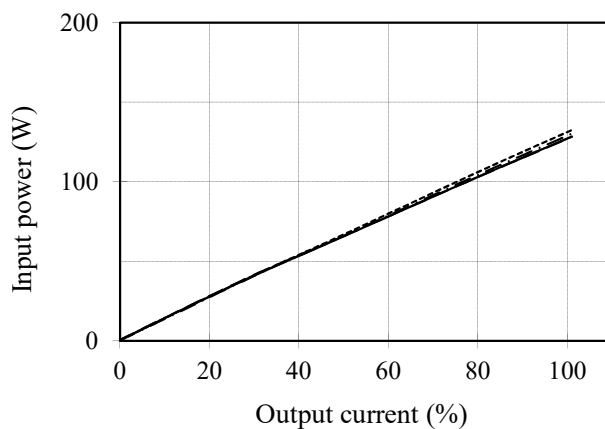
(4) 入力電力対出力電流

Input power vs. Output current

Conditions Vin : 85VAC -----  
 : 115VAC -.-.-.-  
 : 230VAC ————  
 : 264VAC - - - -  
 Ta : 25°C

24V

Vin	Input power
	Iout : 0%
85VAC	0.39W
115VAC	0.41W
230VAC	0.59W
264VAC	0.66W



2.2 過電流保護特性

Over current protection (OCP) characteristics

Conditions

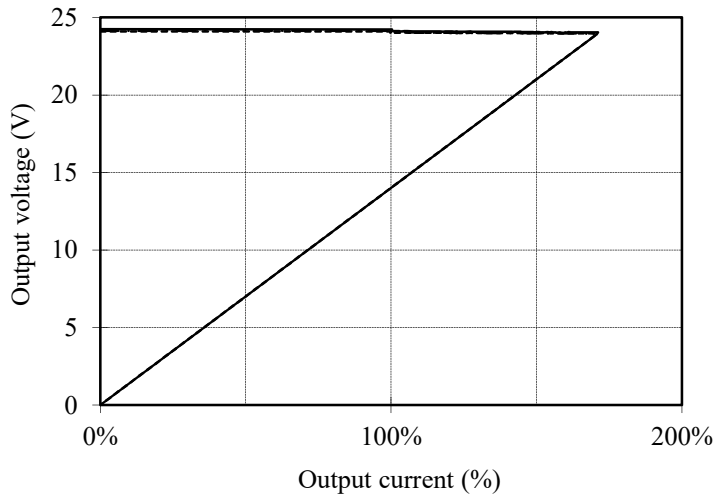
Vin : 115VAC

Ta : -25°C -----

25°C - - - - -

55°C ———

24V



2.3 過電圧保護特性

Over voltage protection (OVP) characteristics

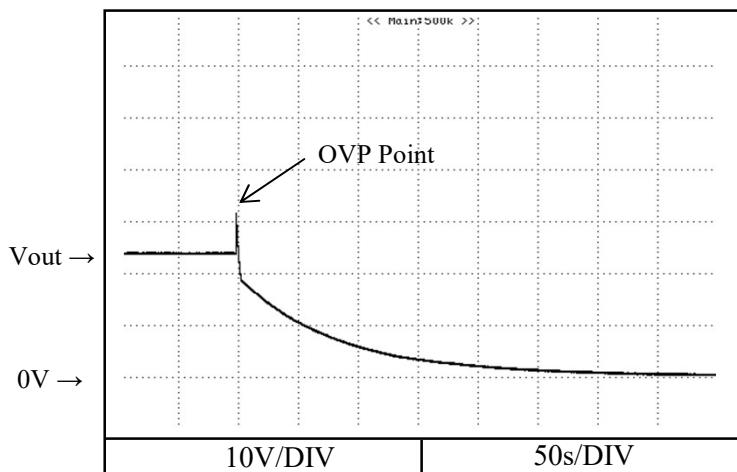
Conditions

Vin : 115VAC

Iout : 0%

Ta : 25°C

24V



2.4 出力立ち上がり特性

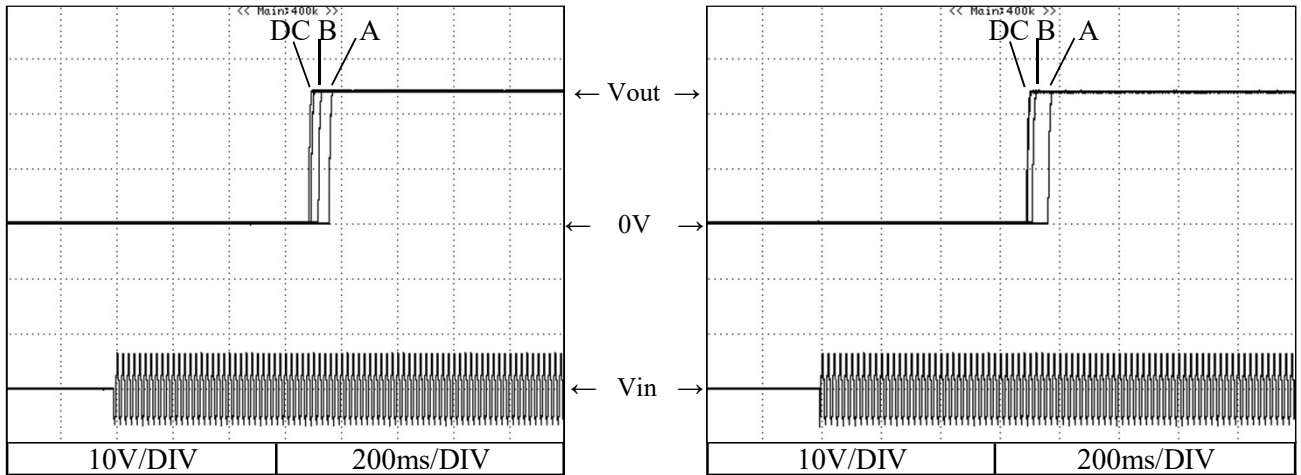
Output rise characteristics

Conditions Vin: 85VAC (A)  
 : 115VAC (B)  
 : 230VAC (C)  
 : 264VAC (D)  
 Ta: 25°C

24V

Iout : 0%

Iout : 100%



2.5 出力立ち下がり特性

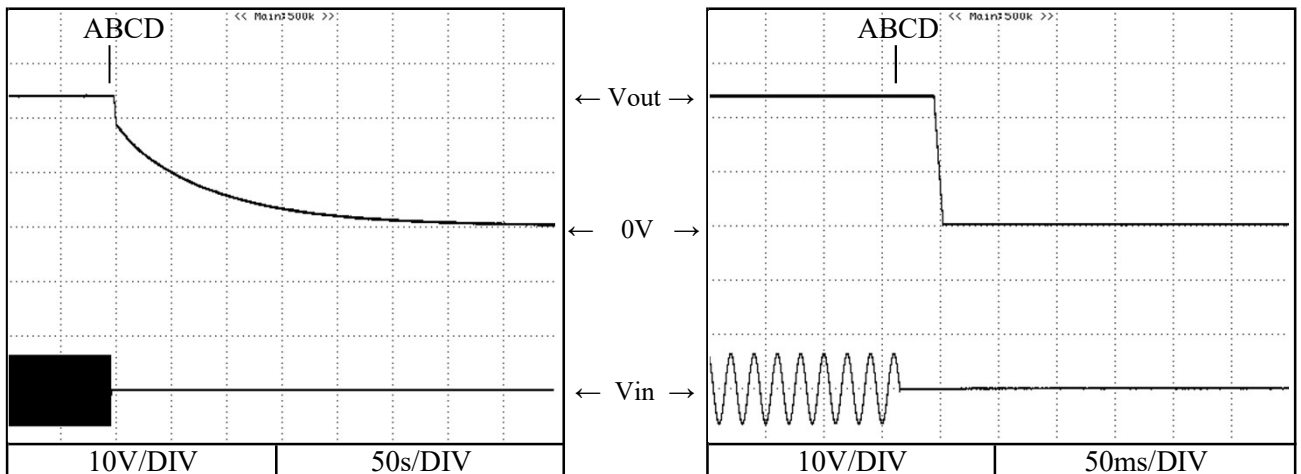
Output fall characteristics

Conditions Vin: 85VAC (A)  
 : 115VAC (B)  
 : 230VAC (C)  
 : 264VAC (D)  
 Ta: 25°C

24V

Iout : 0%

Iout : 100%

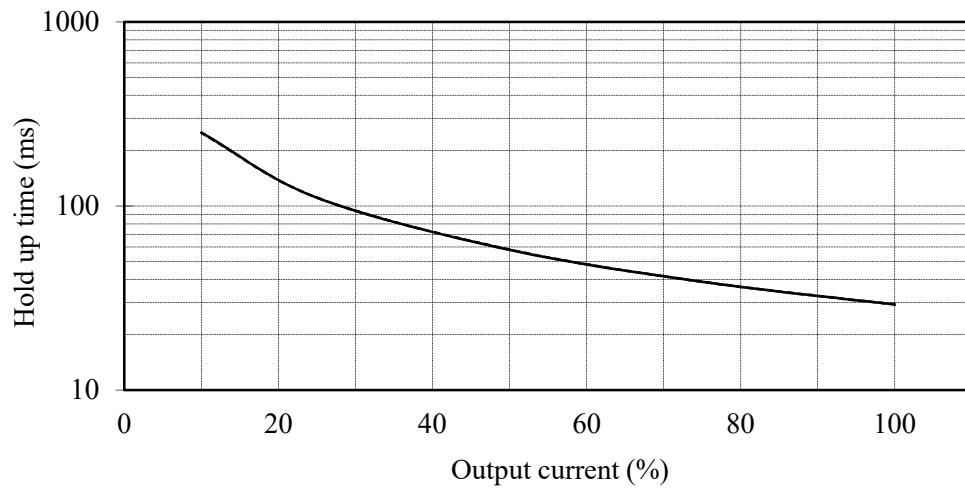


## 2.6 出力保持時間特性

Hold up time characteristics

Conditions Vin : 115VAC -----  
230VAC ————  
Ta : 25°C

24V



2.7 過渡応答（負荷急変）特性

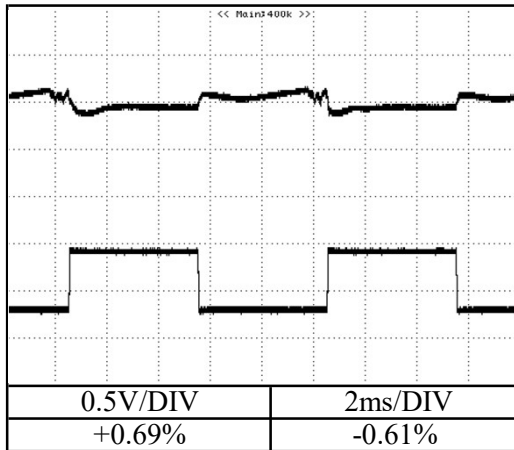
Dynamic load response characteristics

Conditions Vin : 115VAC  
 Iout : 25%↔75%  
 (tr = tf = 50us)  
 Ta : 25°C

24V

f = 100Hz

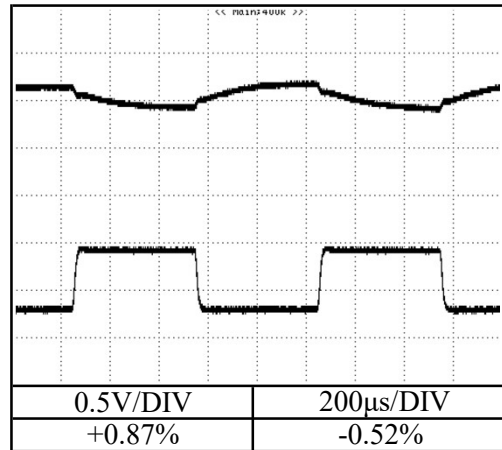
f = 1kHz



← Vout →

← Iout →

← Iout:0% →



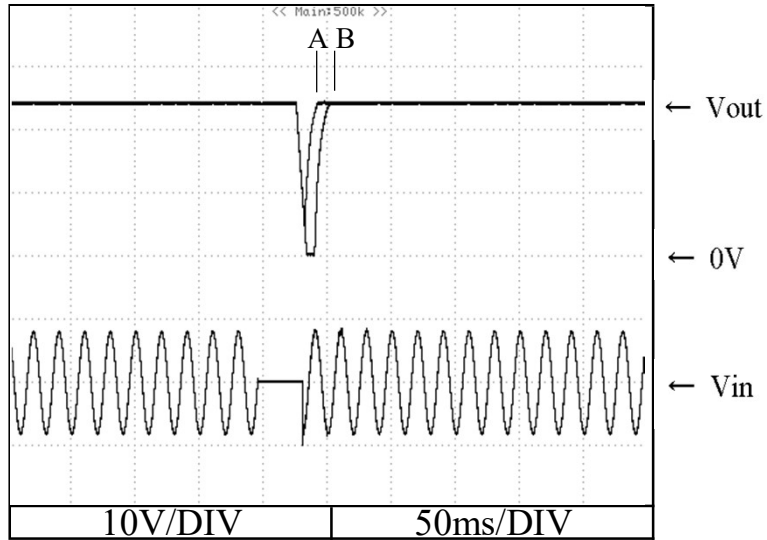
2.8 入力電圧瞬停特性

Response to brown out characteristics

Conditions Vin : 115VAC  
Iout : 100%  
Ta : 25°C

24V

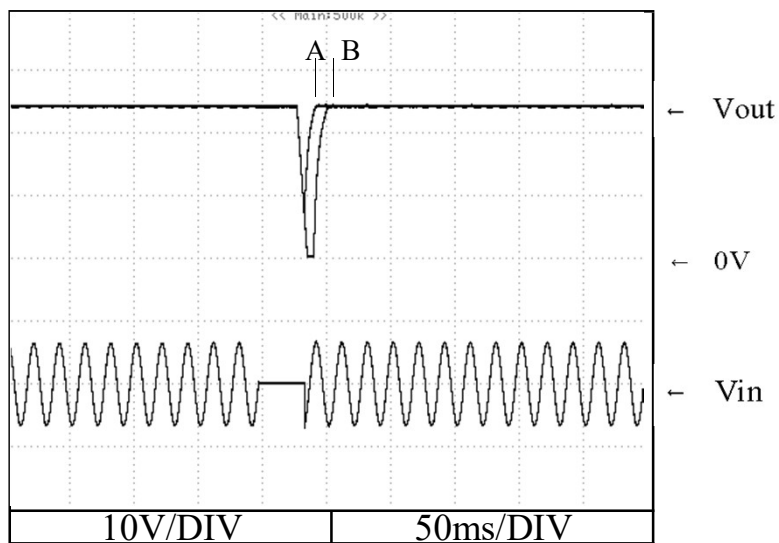
A = 28ms  
B = 29ms



Conditions Vin : 230VAC  
Iout : 100%  
Ta : 25°C

24V

A = 29ms  
B = 36ms

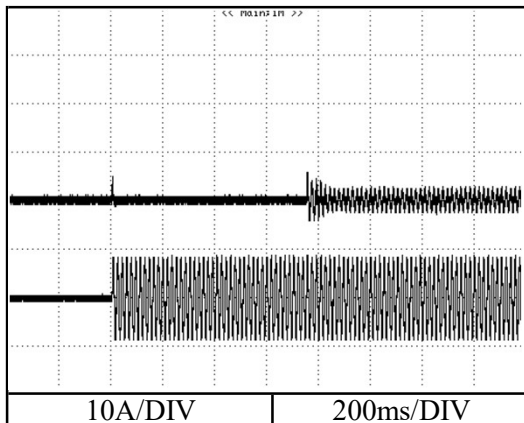


2.9 入力サージ電流（突入電流）波形  
Inrush current waveform

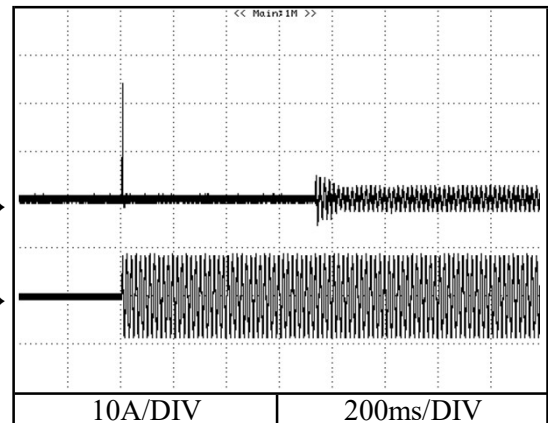
24V

Conditions Vin : 115VAC  
Iout : 100%  
Ta : 25°C

Switch on phase angle of input AC voltage  
 $\phi = 0^\circ$

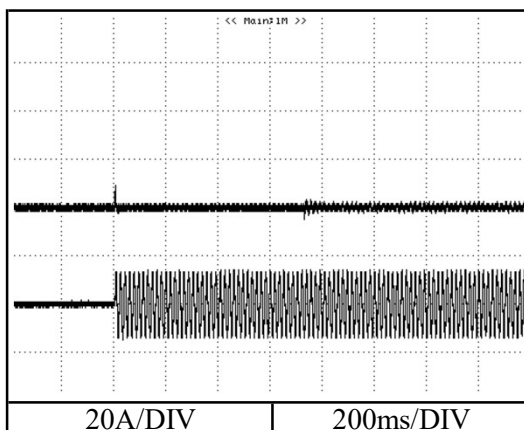


Switch on phase angle of input AC voltage  
 $\phi = 90^\circ$

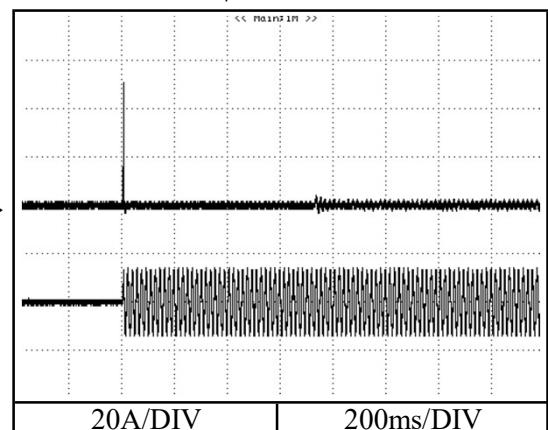


Conditions Vin : 230VAC  
Iout : 100%  
Ta : 25°C

Switch on phase angle of input AC voltage  
 $\phi = 0^\circ$



Switch on phase angle of input AC voltage  
 $\phi = 90^\circ$





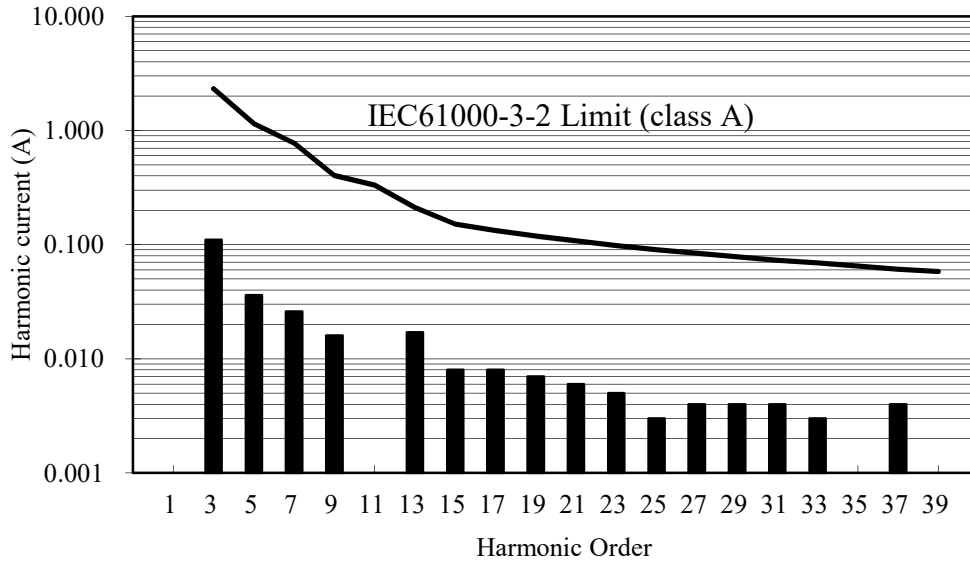
2.10 高調波成分

Input current harmonics

Conditions Iout : 100%  
Ta : 25°C

24V

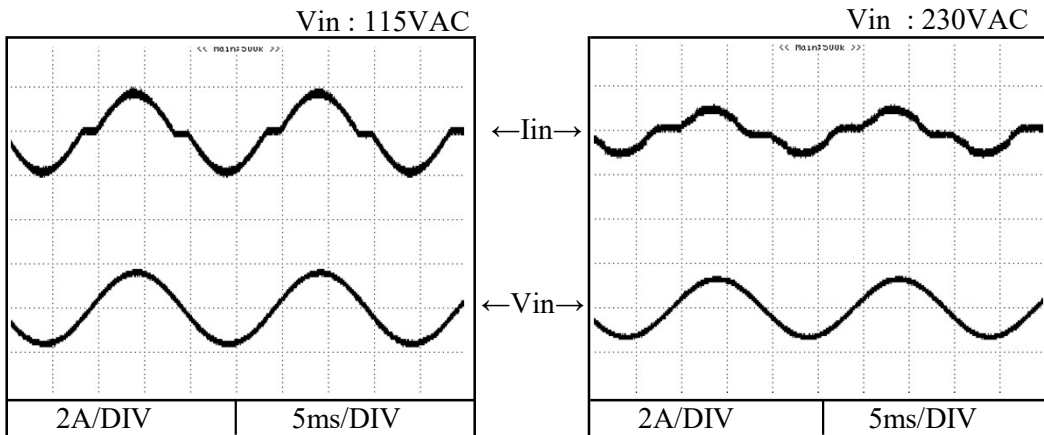
Vin : 115VAC



2.11 入力電流波形

Input current waveform

Conditions Iout : 100%  
Ta : 25°C



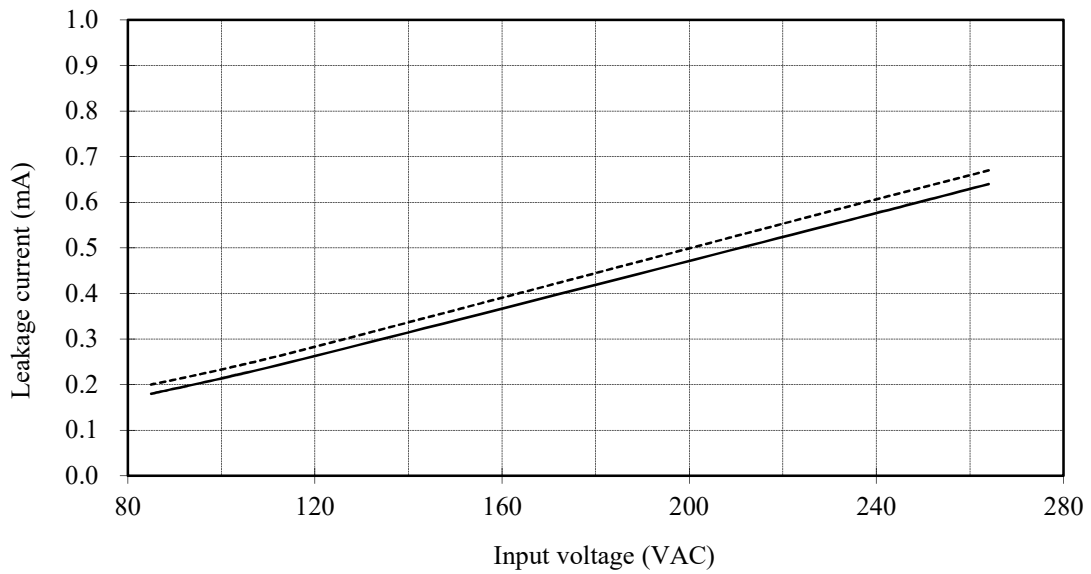
2.12 リーク電流特性

Leakage current characteristics

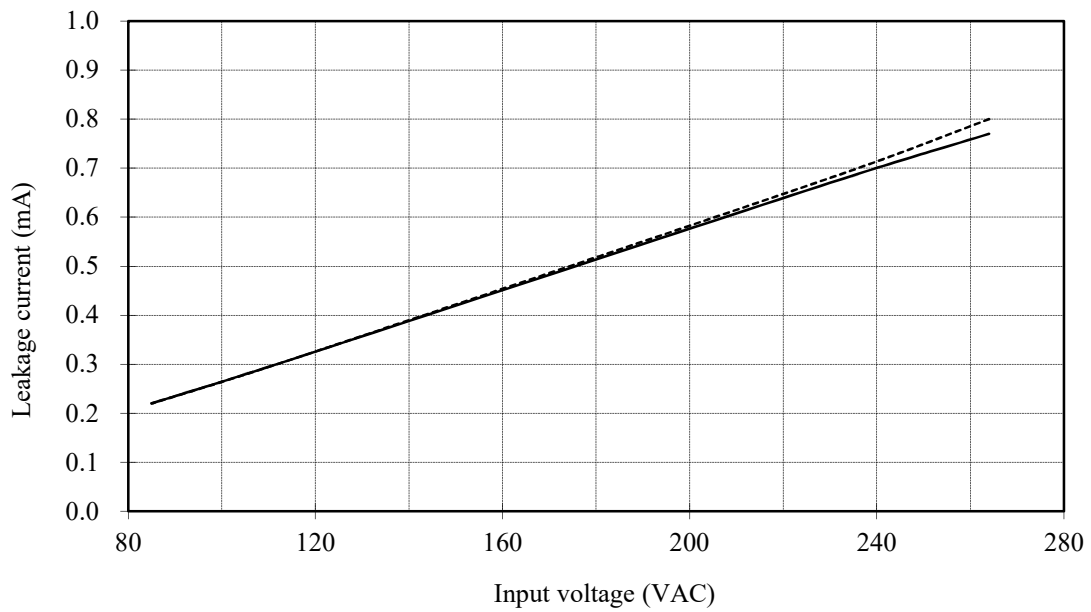
Conditions Iout : 0% -----  
 100% ———  
 Ta : 25°C

24V

f : 50Hz



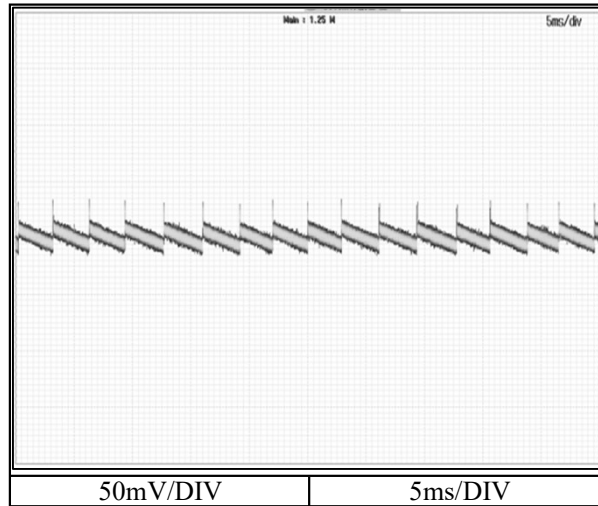
f : 60Hz



2.13 出カリップル、ノイズ波形  
Output ripple and noise waveform

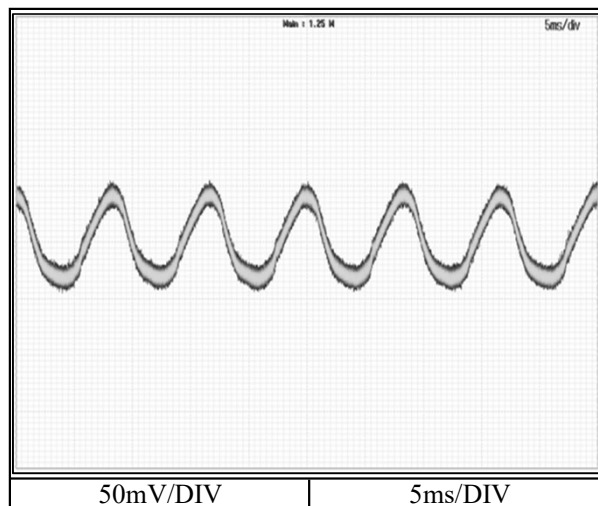
Conditions Vin : 230VAC  
Iout : 0%  
Ta : 25°C

24V



Conditions Vin : 230VAC  
Iout : 100%  
Ta : 25°C

24V



2.14 EMI 特性

Electro-Magnetic Interference characteristics

Conditions

Vin : 230VAC

Iout : 100%

Ta : 25°C

雑音端子電圧

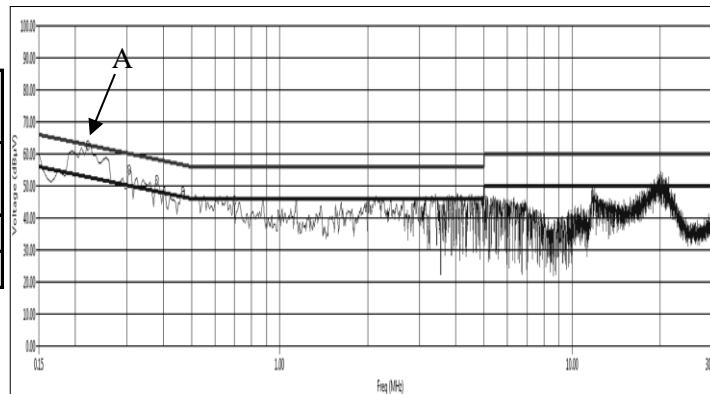
Conducted Emission

24V

QP spectrum waveform : \_\_\_\_\_

Phase : L

Point A (0.22MHz)		
Ref. Data	Limit (dBuV)	Measure (dBuV)
QP	62.8	58.9
AV	52.8	39.3



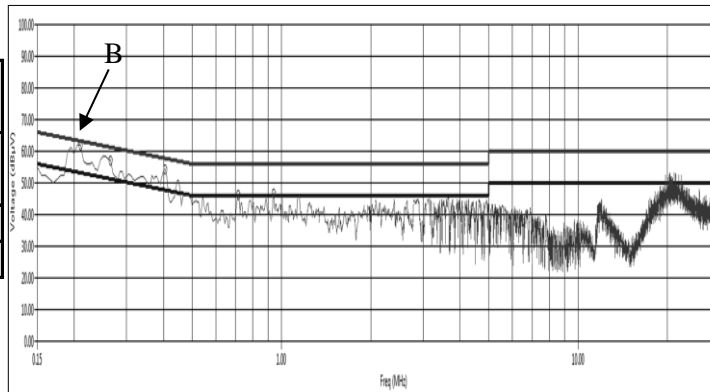
EN55032-B  
QP Limit

EN55032-B  
AV Limit

QP spectrum waveform : \_\_\_\_\_

Phase : N

Point B (0.21MHz)		
Ref. Data	Limit (dBuV)	Measure (dBuV)
QP	63.2	58.4
AV	53.2	35.8



EN55032-B  
QP Limit

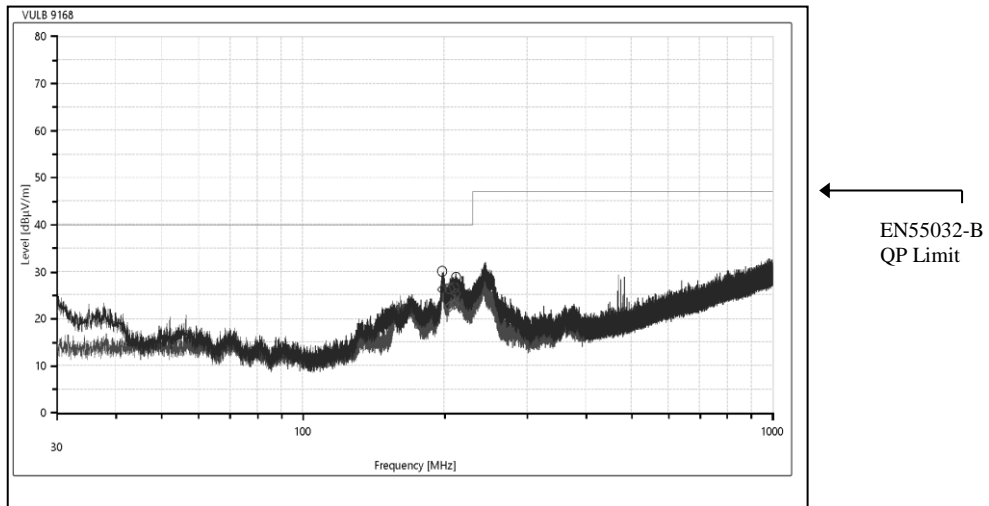
EN55032-B  
AV Limit

EN55011B,EN55032B,FCCBの限界値はVCCI class Bの限界値と同じ  
Limit of EN55011B,EN55032B,FCCB are same as its VCCI class B.

雑音電界強度  
Radiated Emission

24V

Conditions Vin : 230VAC  
Iout : 100%  
Ta : 25°C  
Horizontal : —  
Vertical : —



EN55011B,EN55032Bの限界値はVCCI class Bの限界値と同じ  
Limit of EN55011B,EN55032B are same as its VCCI class B.  
表示はピーク値  
Indication is peak values.