

RDS180A-24

EVALUATION DATA

型式データ

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

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使用記号 Terminology used

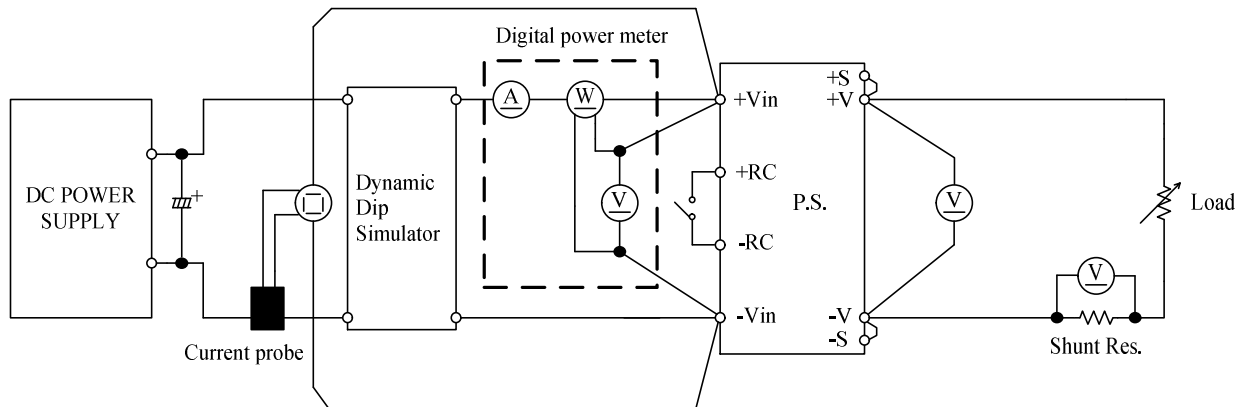
	定義	Definition
Vin 入力電圧	Input voltage
Vout 出力電圧	Output voltage
Iin	..... 入力電流	Input current
Iout	..... 出力電流	Output current
Ta	..... 周囲温度	Ambient temperature
f	..... 周波数	Frequency
RC	..... ON/OFFコントロール	ON/OFF Control

※ 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.

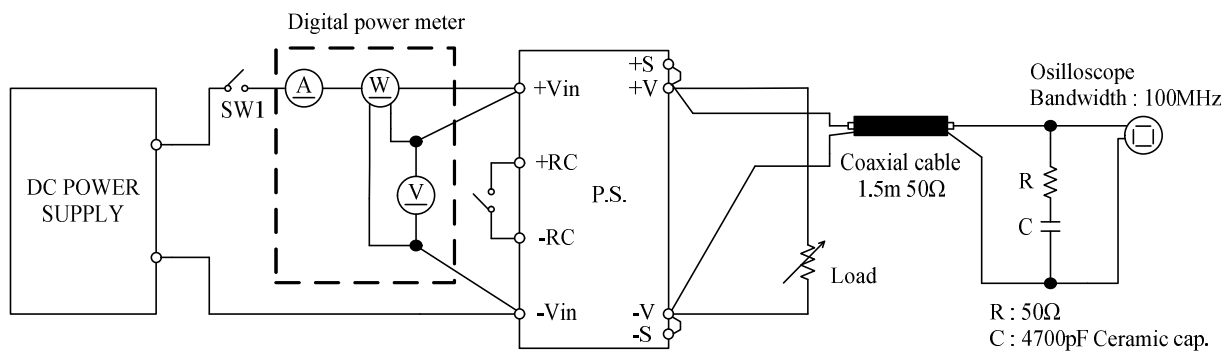
測定回路3 Circuit 3 used for determination

- 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

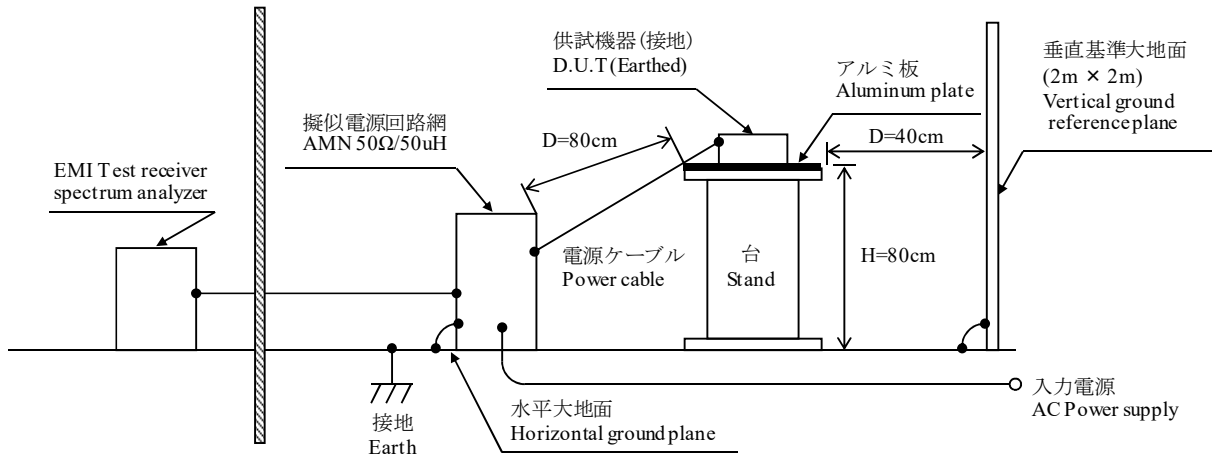
- 出力リップル、ノイズ波形 Output ripple and noise waveform



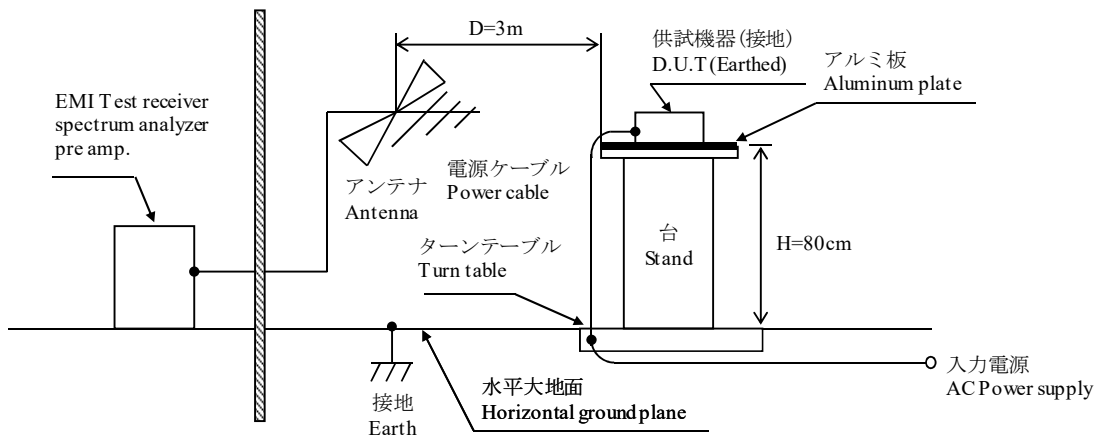
測定構成 Configuration used for determination

- 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 ELECT.	DL1740 / DLM2054
2	DIGITAL MULTIMETER	AGILENT	34970A
3	DIGITAL POWER METER	YOKOGAWA ELECT.	WT210 / WT310HC
4	CURRENT PROBE	YOKOGAWA ELECT.	701932 / 701930
5	DYNAMIC DUMMY LOAD	TAKASAGO	FK-400L / FK-600L
6	DUMMY LOAD	PCN	RHF250 SERIES
7	CVCF	KIKUSUI	PCR4000LA / PCR4000LE
8	CVCF	TAKASAGO	AA2000XG
9	CONTROLLED TEMP. CHAMBER	ESPEC	SU-641
10	EMI TEST RECEIVER / SPECTRUM ANALYZER	ROHDE & SCHWARZ	ESR3
11	PRE AMP.	SONOMA	310N
12	AMN	SCHWARZBECK	NNLK8121
13	ANTENNA	TESEQ	CBL6111D

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

5V

1. Regulation - line and load

Condition Ta : 25 °C

Iout \ Vin	18VDC	24VDC	32VDC	Line regulation	
0%	5.008V	5.008V	5.008V	0mV	0.000%
50%	5.004V	5.004V	5.004V	0mV	0.000%
100%	5.003V	5.003V	5.003V	0mV	0.000%
Load regulation	5mV	5mV	5mV		
	0.100%	0.100%	0.100%		

2. Temperature drift

Conditions Vin : 24 VDC

Iout : 100 %

Ta	-20°C	+25°C	+50°C	Temperature stability	
Vout	4.977V	5.003V	5.008V	31mV	0.620%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 °C

Iout : 100 %

Start up voltage (Vin)	16.3 VDC
Drop out voltage (Vin)	14.7 VDC

12V

1. Regulation - line and load

Condition Ta : 25 °C

Iout \ Vin	18VDC	24VDC	32VDC	Line regulation	
0%	12.025V	12.025V	12.025V	0mV	0.000%
50%	12.022V	12.022V	12.021V	1mV	0.008%
100%	12.020V	12.020V	12.020V	0mV	0.000%
Load regulation	5mV	5mV	5mV		
	0.042%	0.042%	0.042%		

2. Temperature drift

Conditions Vin : 24 VDC

Iout : 100 %

Ta	-20°C	+25°C	+50°C	Temperature stability	
Vout	11.995V	12.020V	12.015V	25mV	0.208%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 °C

Iout : 100 %

Start up voltage (Vin)	16.4 VDC
Drop out voltage (Vin)	15.5 VDC

24V

1. Regulation - line and load

Condition Ta : 25 °C

Iout \ Vin	18VDC	24VDC	32VDC	Line regulation	
0%	23.996V	23.996V	23.996V	0mV	0.000%
50%	23.992V	23.992V	23.992V	0mV	0.000%
100%	23.991V	23.991V	23.991V	0mV	0.000%
Load regulation	5mV	5mV	5mV		
	0.042%	0.042%	0.042%		

2. Temperature drift

Conditions Vin : 24 VDC

Iout : 100 %

Ta	-20°C	+25°C	+50°C	Temperature stability	
Vout	23.938V	23.991V	24.004V	66mV	0.550%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 °C

Iout : 100 %

Start up voltage (Vin)	16.6 VDC
Drop out voltage (Vin)	14.9 VDC

(2) リップルノイズ電圧対入力電圧 Ripple noise voltage vs. Input voltage

Conditions

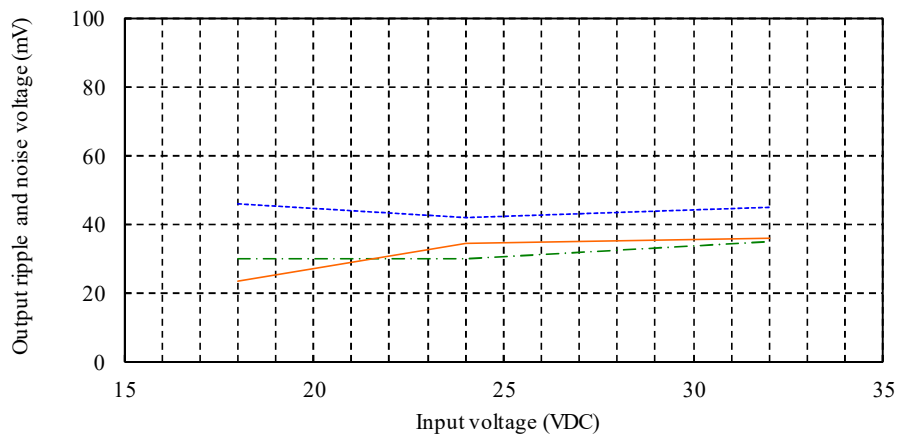
Iout : 100 %

Ta : -20 °C

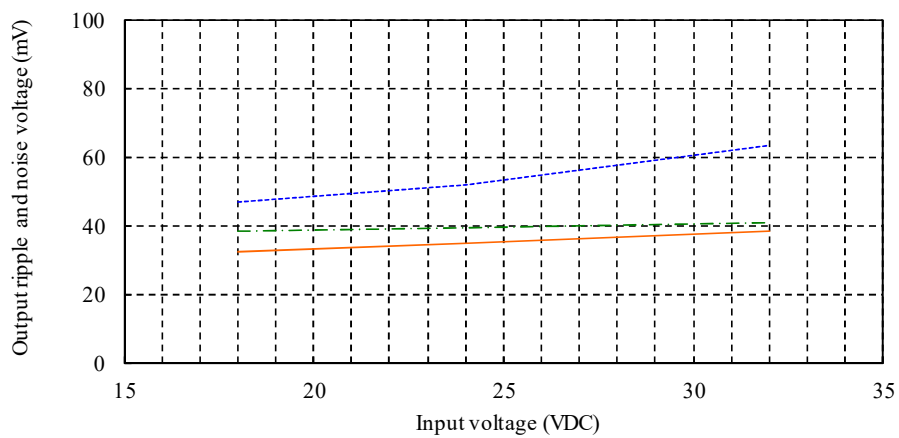
25 °C

50 °C

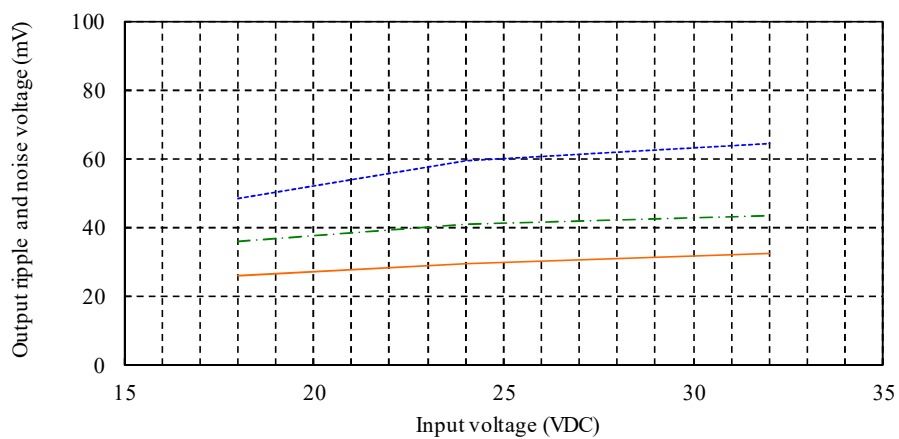
5V



12V



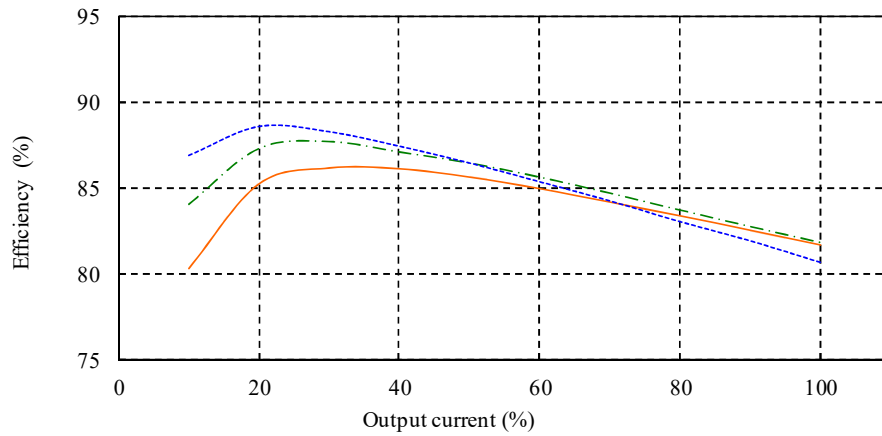
24V



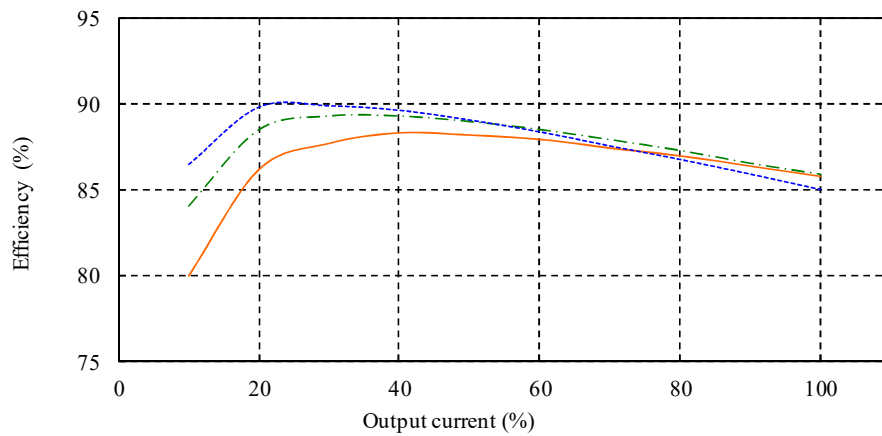
(3) 効率対出力電流 Efficiency vs. Output current

Conditions Vin : 18 VDC ---
 24 VDC - - -
 32 VDC —
 Ta : 25 °C

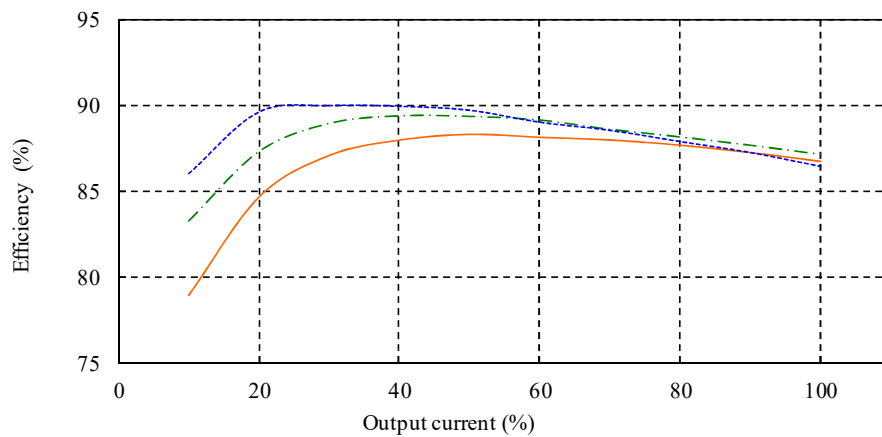
5V



12V



24V

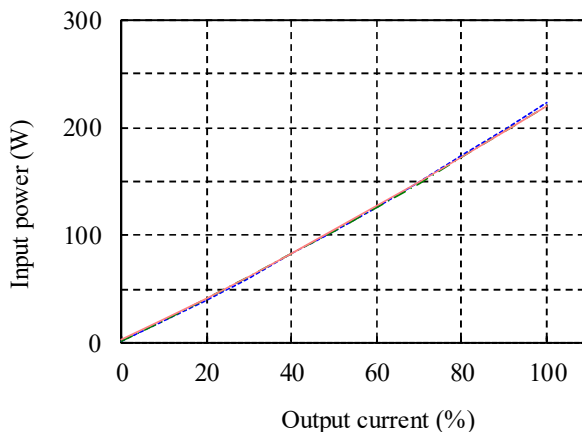


(4) 入力電力対出力電流 Input power vs. Output current

Conditions Vin : 18 VDC ---
 24 VDC - - -
 32 VDC ———
 Ta : 25 °C

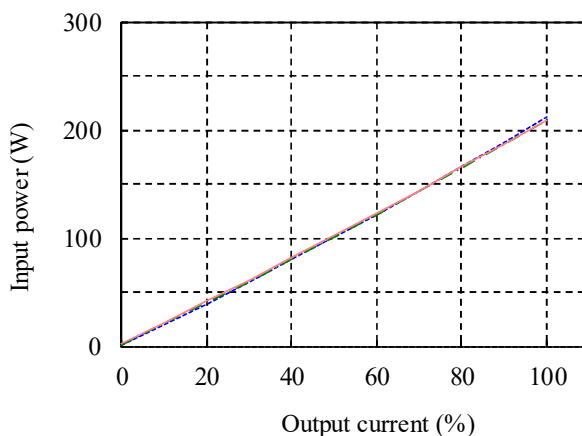
5V

Vin	Input power	
	Iout : 0%	Control OFF
18VDC	1.2W	0.3W
24VDC	1.9W	0.5W
32VDC	2.7W	0.9W



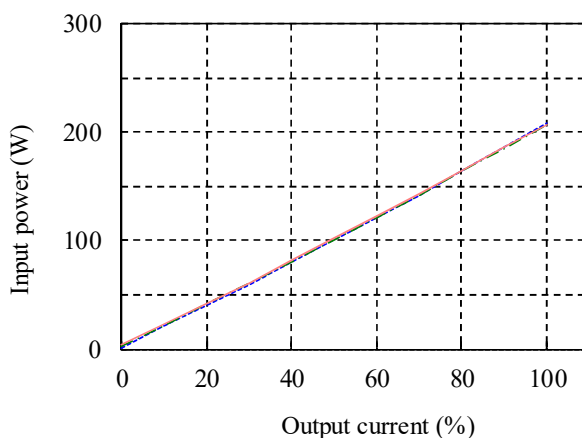
12V

Vin	Input power	
	Iout : 0%	Control OFF
18VDC	1.5W	0.3W
24VDC	2.2W	0.5W
32VDC	3.2W	0.9W



24V

Vin	Input power	
	Iout : 0%	Control OFF
18VDC	1.9W	0.3W
24VDC	2.6W	0.5W
32VDC	3.6W	0.9W

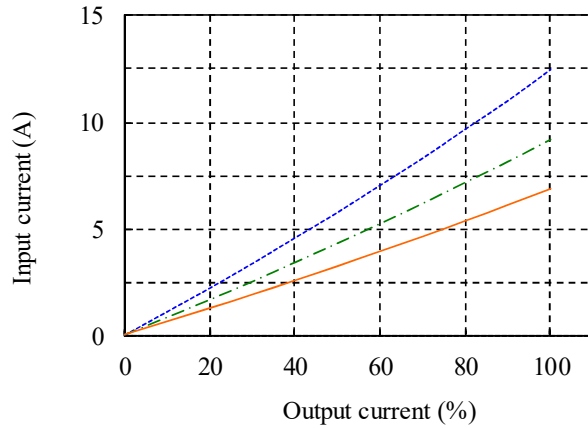


(5) 入力電流対出力電流 Input current vs. Output current

Conditions Vin : 18 VDC ---
 24 VDC - - -
 32 VDC ———
 Ta : 25 °C

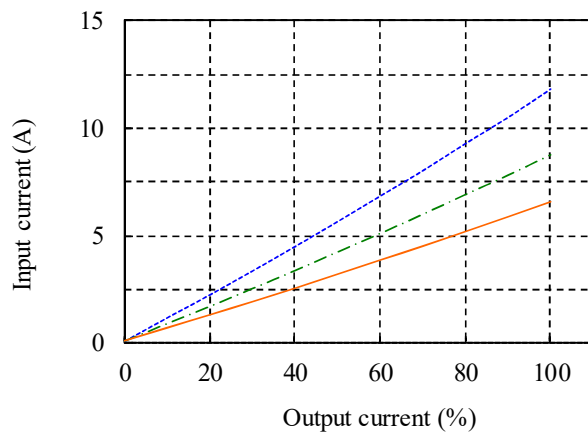
5V

Vin	Input current	
	Iout : 0%	Control OFF
18VDC	0.06A	0.02A
24VDC	0.08A	0.02A
32VDC	0.09A	0.03A



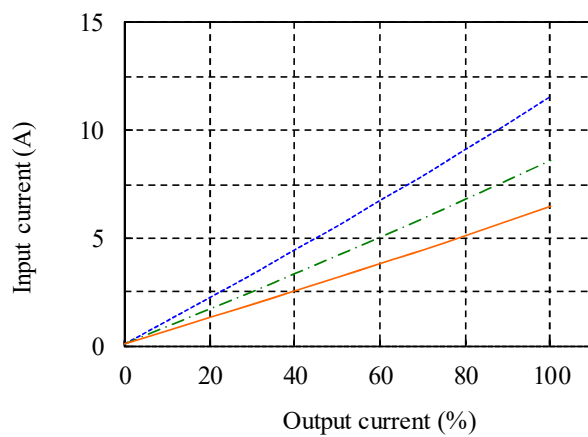
12V

Vin	Input current	
	Iout : 0%	Control OFF
18VDC	0.08A	0.02A
24VDC	0.09A	0.02A
32VDC	0.10A	0.03A



24V

Vin	Input current	
	Iout : 0%	Control OFF
18VDC	0.10A	0.02A
24VDC	0.11A	0.02A
32VDC	0.11A	0.03A

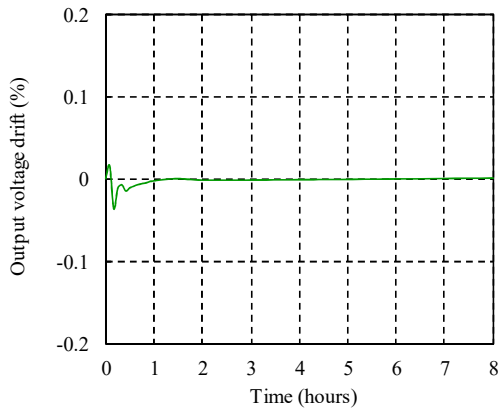


2-2. 通電ドリフト特性

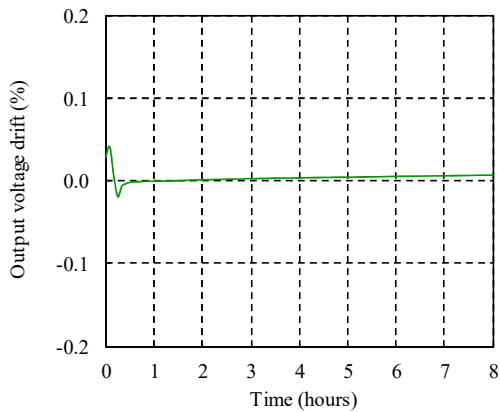
Warm up voltage drift characteristics

Conditions Vin : 24 VDC
Iout : 100 %
Ta : 25 °C

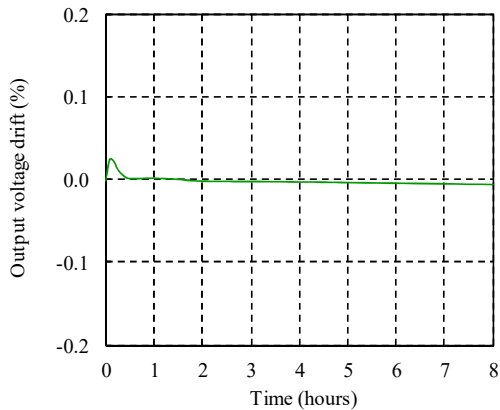
5V



12V



24V

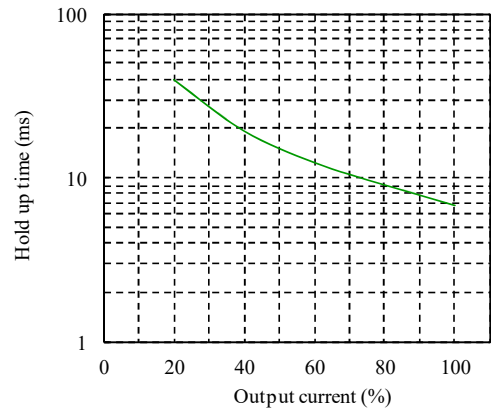


2-3. 出力保持時間特性

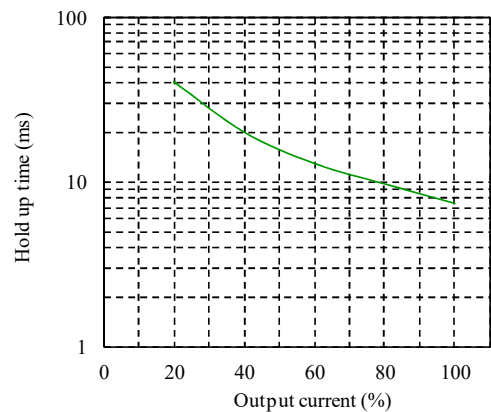
Hold up time characteristics

Conditions Vin : 24 VDC
Ta : 25 °C

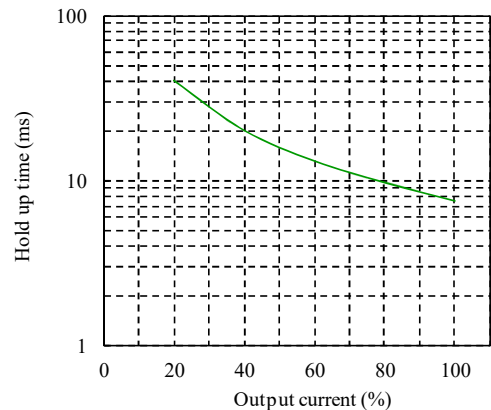
5V



12V



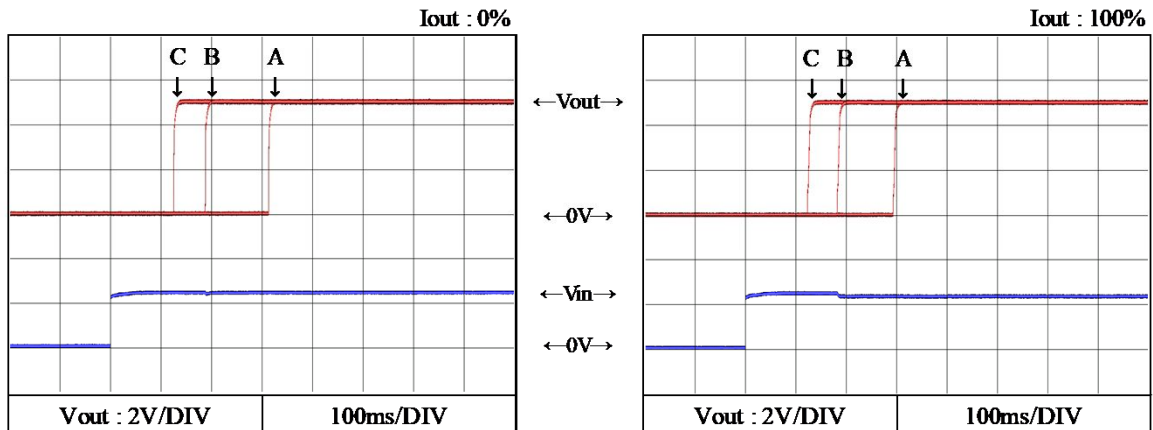
24V



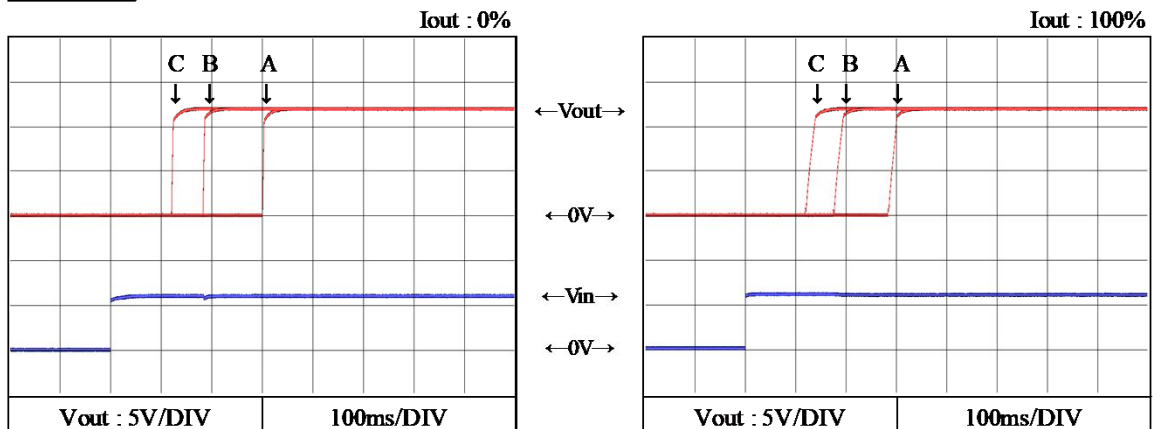
2-4. 出力立ち上がり特性 Output rise characteristics

Conditions Vin : 18 VDC (A)
 24 VDC (B)
 32 VDC (C)
 Ta : 25 °C

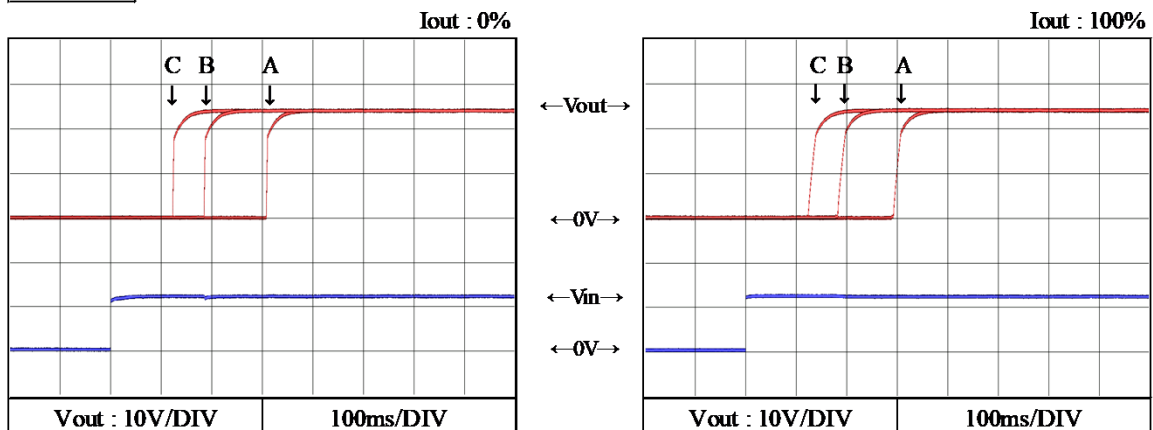
5V



12V



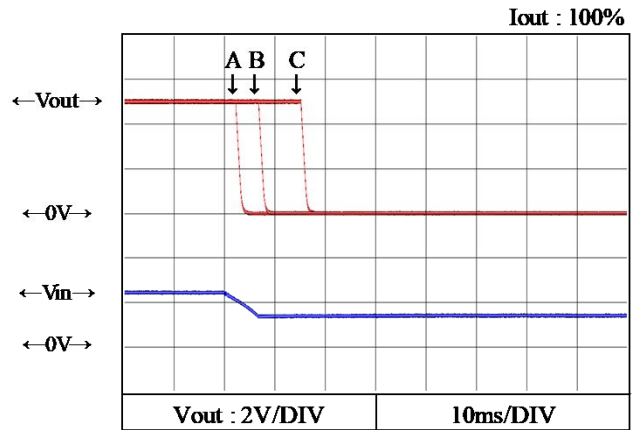
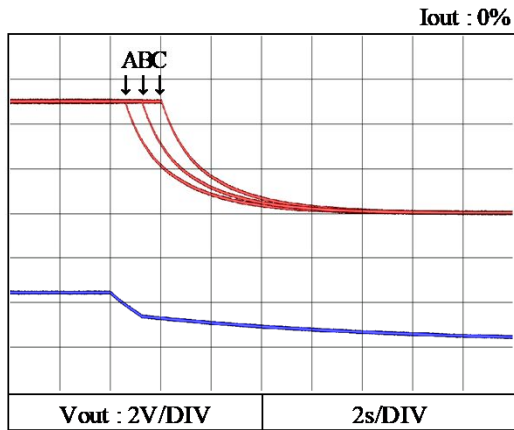
24V



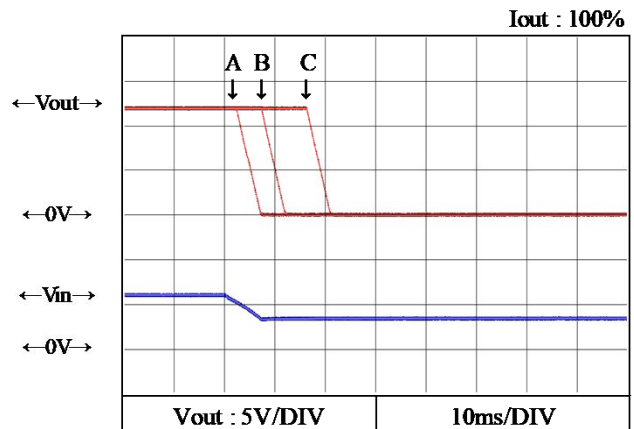
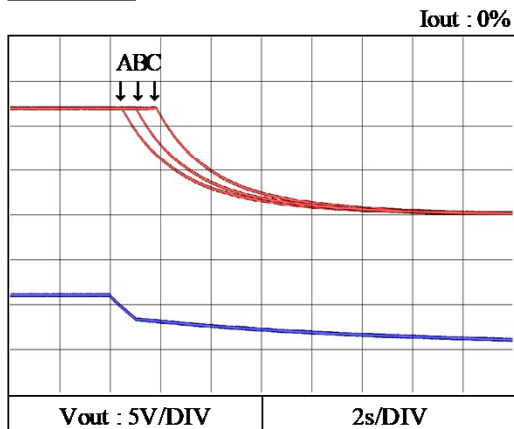
2-5. 出力立ち下がり特性 Output fall characteristics

Conditions Vin : 18 VDC (A)
 24 VDC (B)
 32 VDC (C)
 Ta : 25 °C

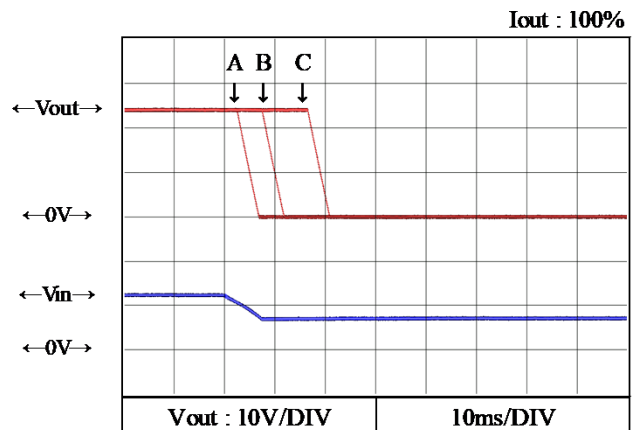
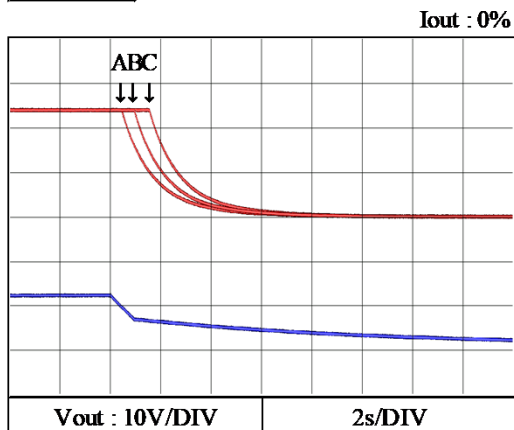
5V



12V



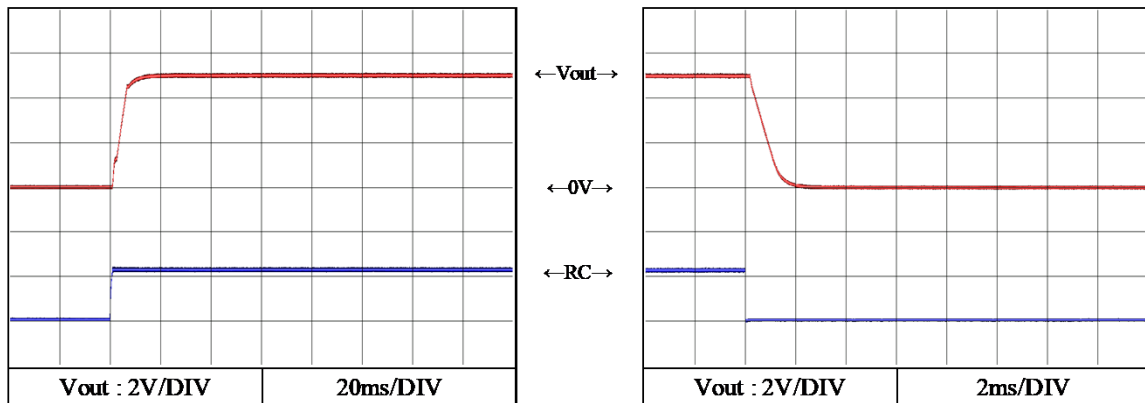
24V



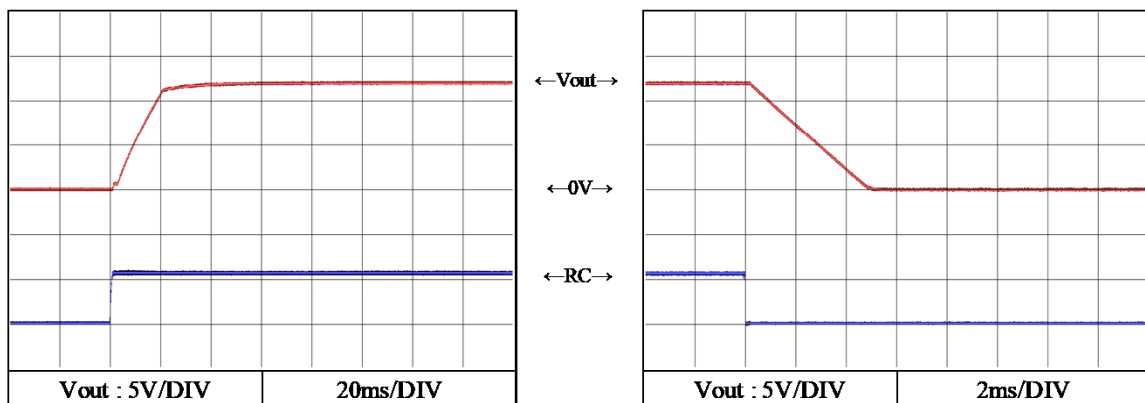
2-6. ON/OFFコントロール時出力立ち上がり、立下がり特性
Output rise, fall characteristics with ON/OFF Control

Conditions Vin: 24 VDC
Iout: 100 %
Ta: 25 °C

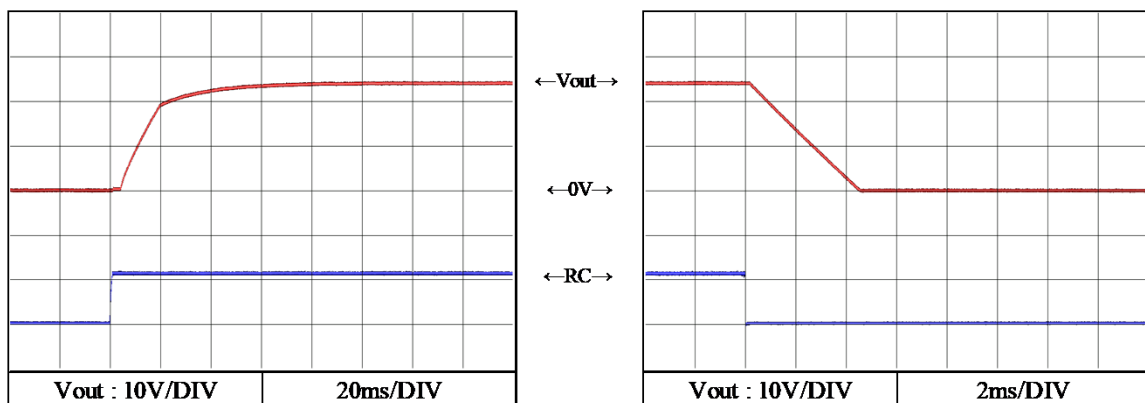
5V



12V



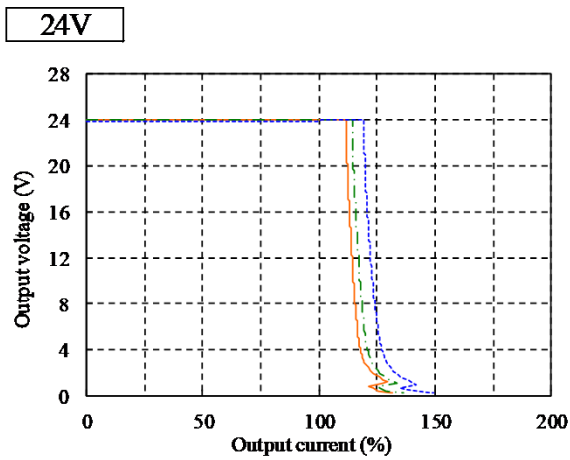
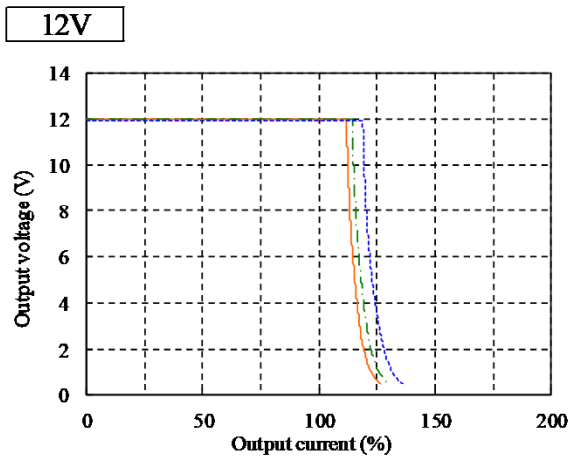
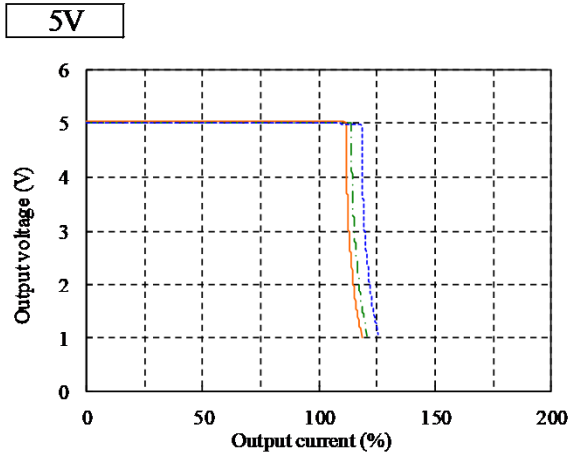
24V



2-7. 過電流保護特性

Over current protection (OCP) characteristics

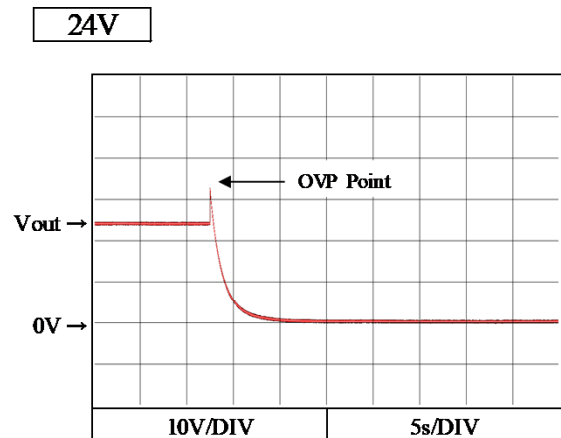
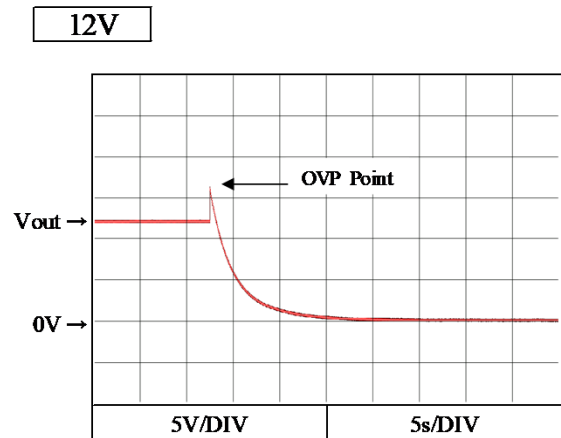
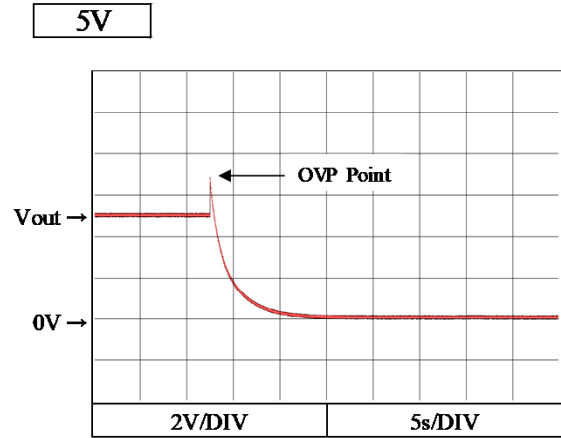
Conditions V_{in} : 24 VDC
 T_a : -20 °C (---)
 25 °C (---)
 50 °C (—)



2-8. 過電圧保護特性

Over voltage protection (OVP) characteristics

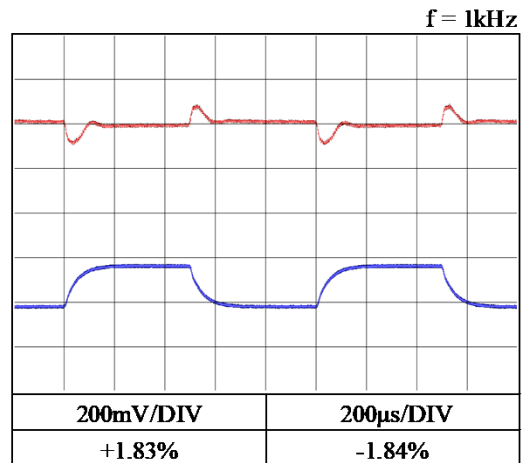
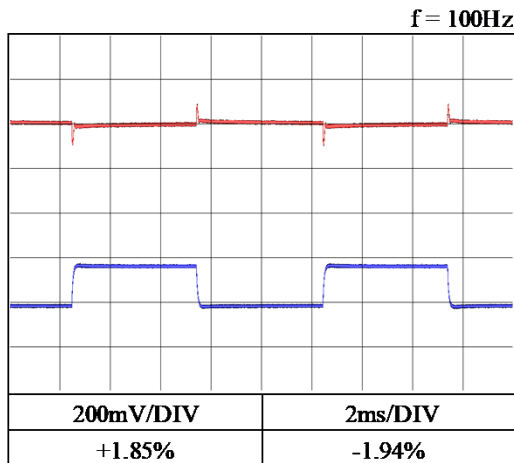
Conditions V_{in} : 24 VDC
 I_{out} : 0 %
 T_a : 25 °C



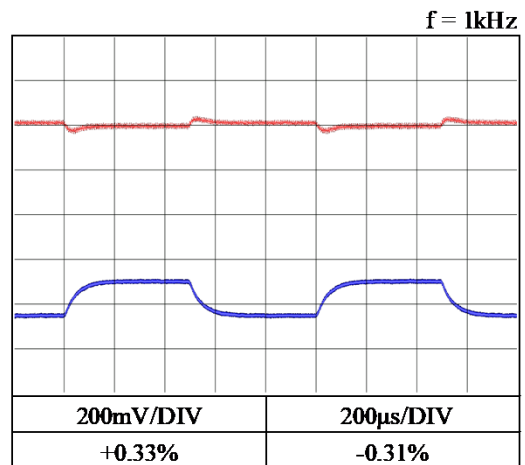
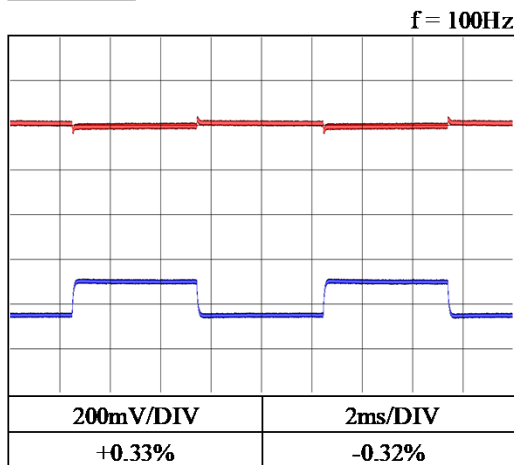
2-9. 過渡応答(負荷急変)特性 Dynamic load response characteristics

Conditions Vin : 24 VDC
 Iout : 50 % ↔ 100 %
 (tr = tf = 100us)
 Ta : 25 °C

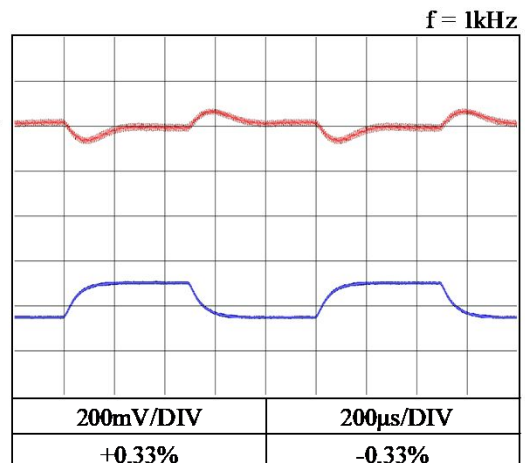
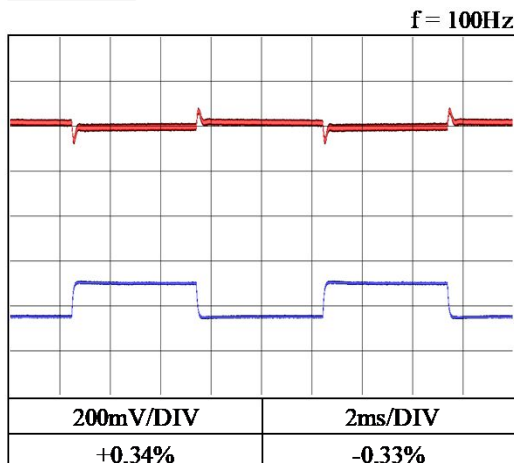
5V



12V

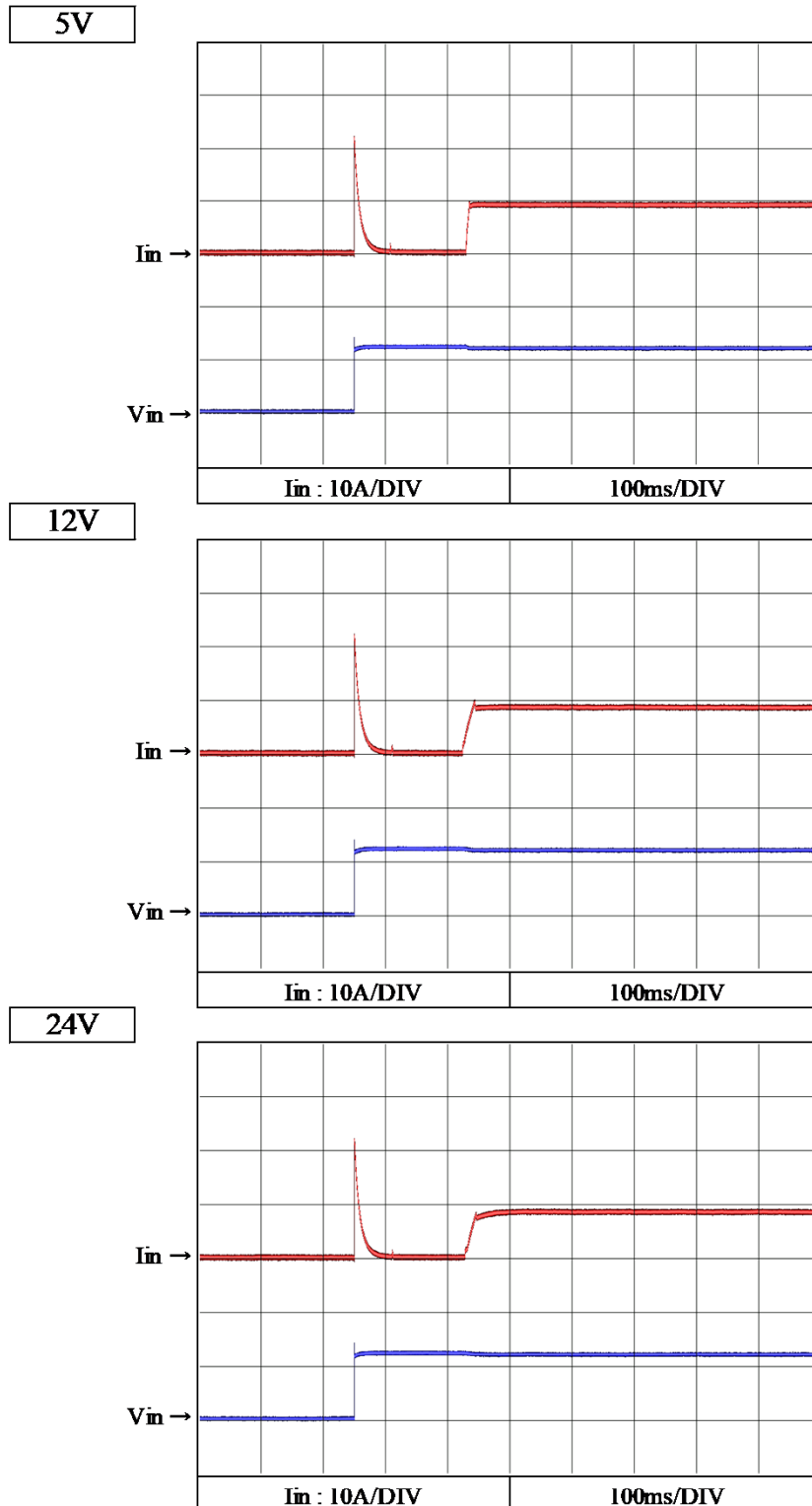


24V



2-10. 入力サージ電流(突入電流)波形 Inrush current waveform

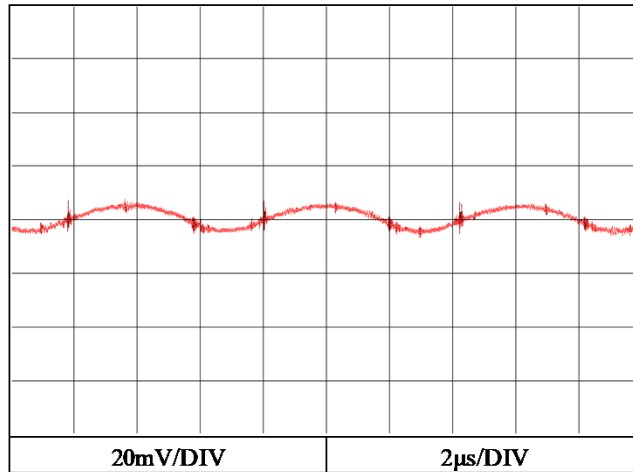
Conditions V_{in} : 24 VDC
 I_{out} : 100 %
 T_a : 25 °C



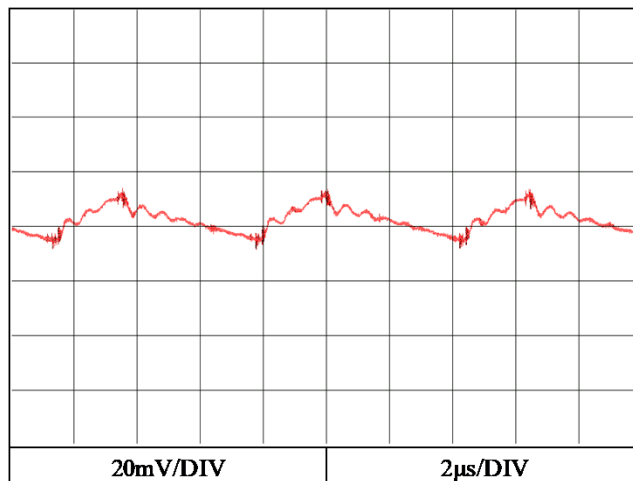
2-11. 出力リップル、ノイズ波形 Output ripple and noise waveform

Conditions Vin : 24 VDC
Iout : 100 %
Ta : 25 °C

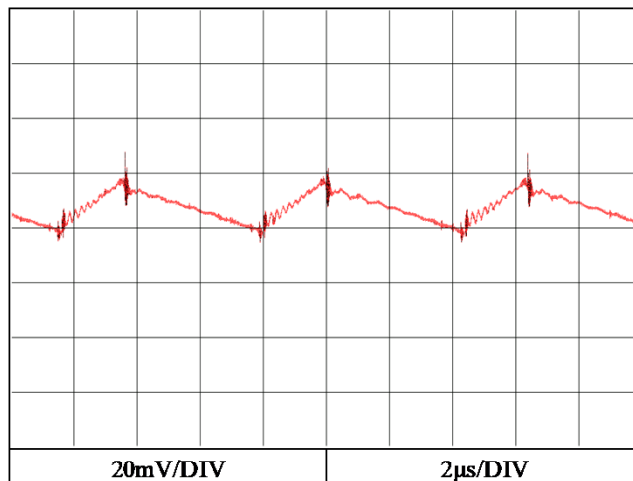
5V



12V



24V



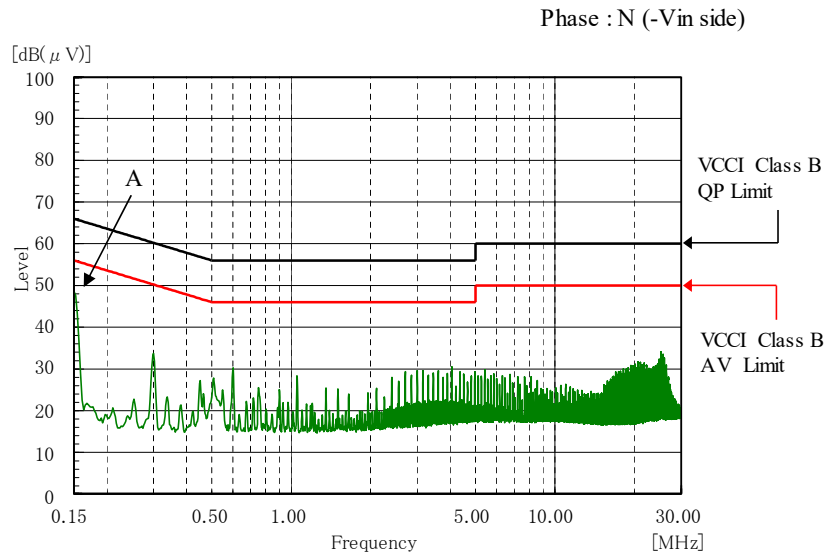
2-12. EMI特性 Electro-Magnetic Interference characteristics

Conditions Vin : 24 VDC
Iout : 100 %
Ta : 25 °C

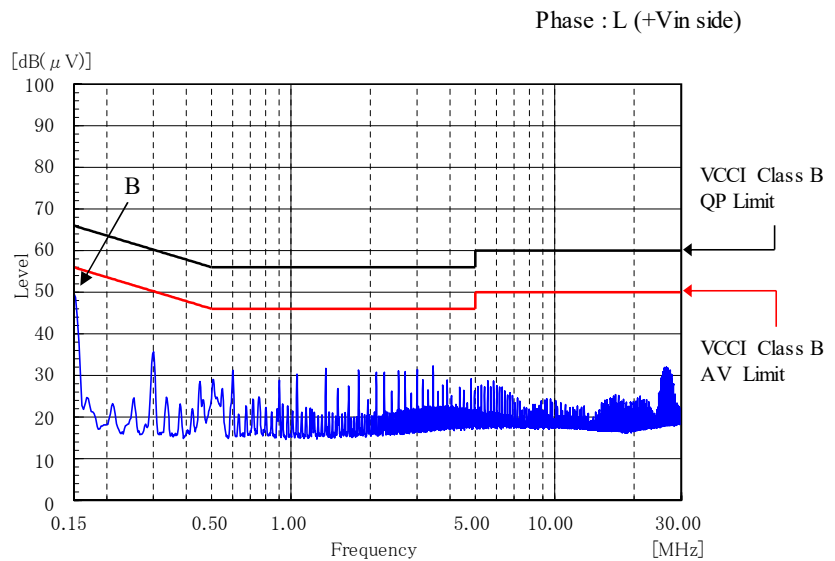
雑音端子電圧
Conducted Emission

5V

Point A (0.150MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	66.0	48.2
AV	56.0	48.3



Point B (0.150MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	66.0	49.5
AV	56.0	49.5



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値

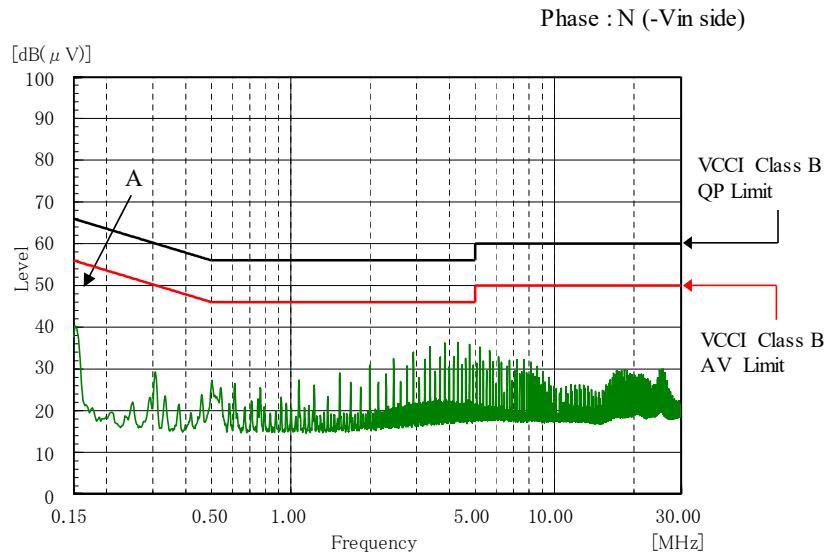
Indication is peak values.

Conditions Vin : 24 VDC
Iout : 100 %
Ta : 25 °C

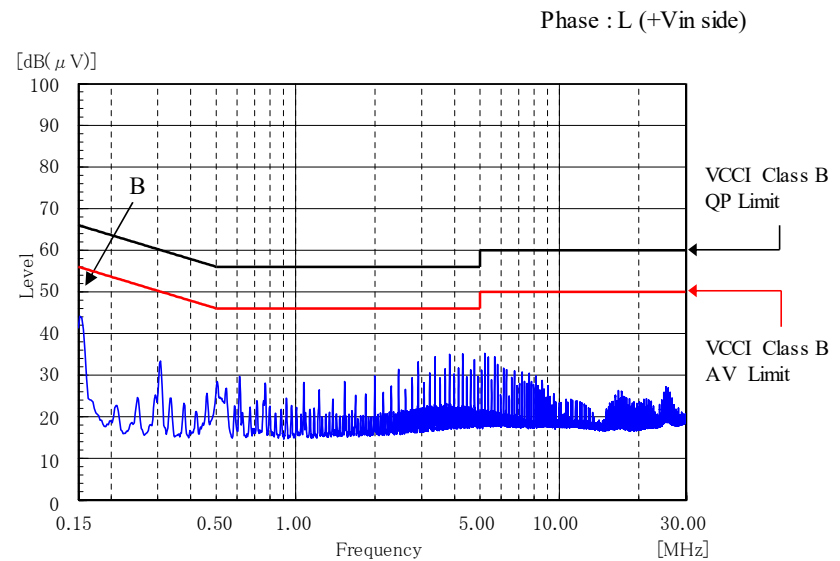
雑音端子電圧
Conducted Emission

12V

Point A (0.152MHz)		
Ref.	Limit	Measure
Data	(dB)	(dB)
QP	65.9	39.6
AV	55.9	39.7



Point B (0.152MHz)		
Ref.	Limit	Measure
Data	(dB)	(dB)
QP	65.9	43.6
AV	55.9	43.7



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値

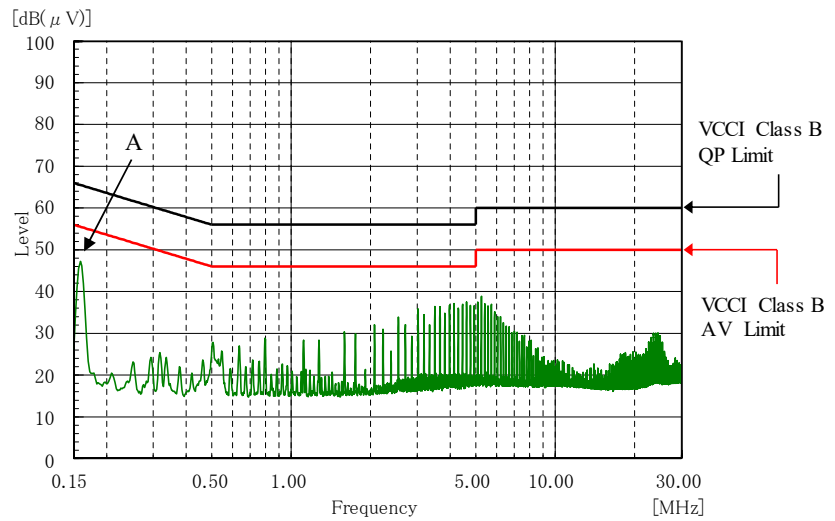
Indication is peak values.

Conditions Vin : 24 VDC
Iout : 100 %
Ta : 25 °C

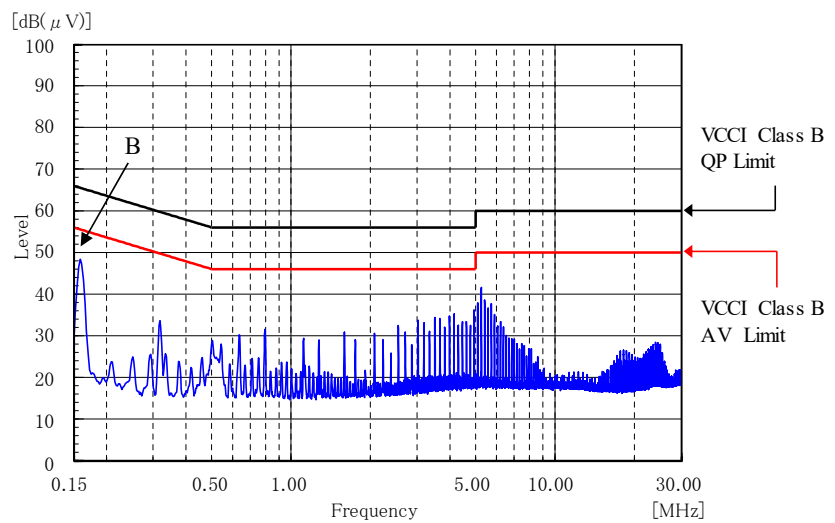
雑音端子電圧
Conducted Emission

24V

Point A (0.159MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	65.5	46.9
AV	55.5	47.0



Point B (0.159MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	65.5	48.0
AV	55.5	48.1



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

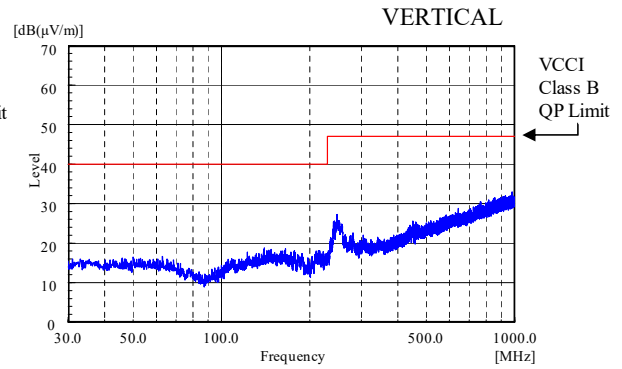
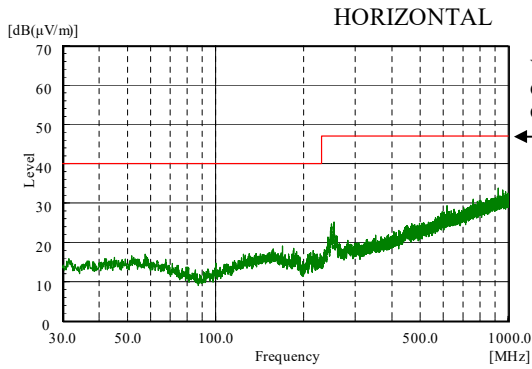
表示はピーク値

Indication is peak values.

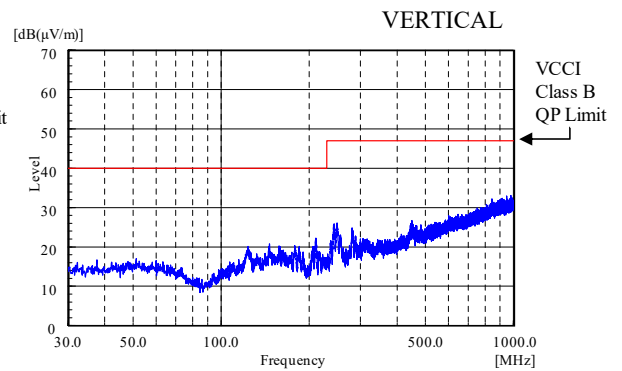
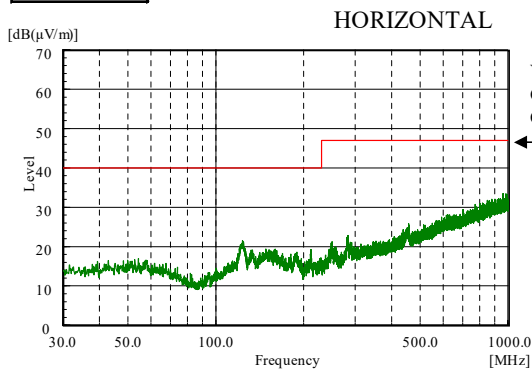
Conditions Vin : 24 VDC
 Iout : 100 %
 Ta : 25 °C

雑音電界強度
 Radiated Emission

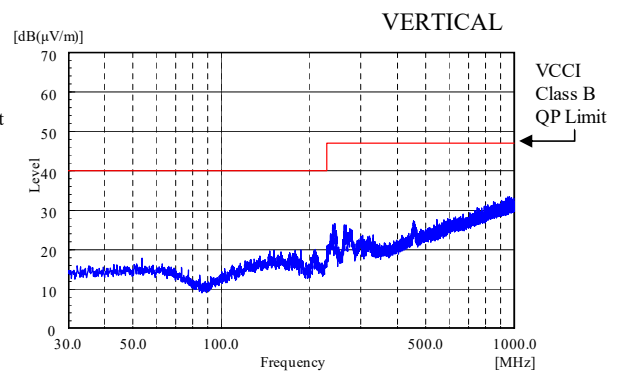
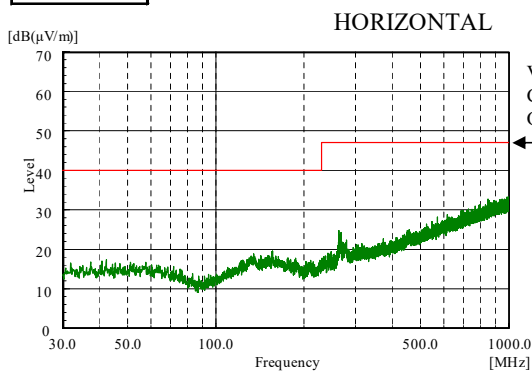
5V



12V



24V



EN55011-B,EN55032-B,FCC-Bの限界値はVCCI class Bの限界値と同じ

Limit of EN55011-B,EN55032-B,FCC-B are same as its VCCI class B.

表示はピーク値

Indication is peak values.