GUS1000

EVALUATION DATA

INDEX

2. Characteristics

Terminology used

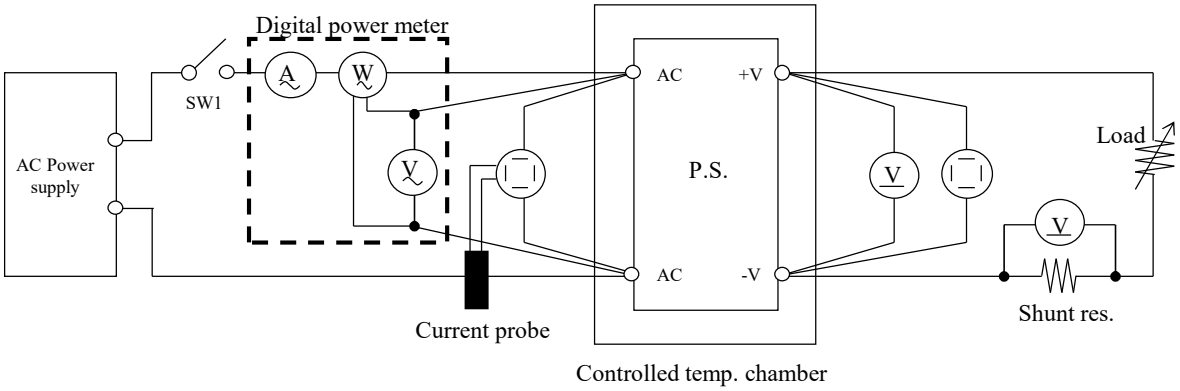
	Definition	
Vin	.....	Input voltage
Vout	.....	Output voltage
Iin	.....	Input current
Iout	.....	Output current
Ta	.....	Ambient temperature
f	.....	Frequency

1. Evaluation Method

1.1 Circuit used for determination

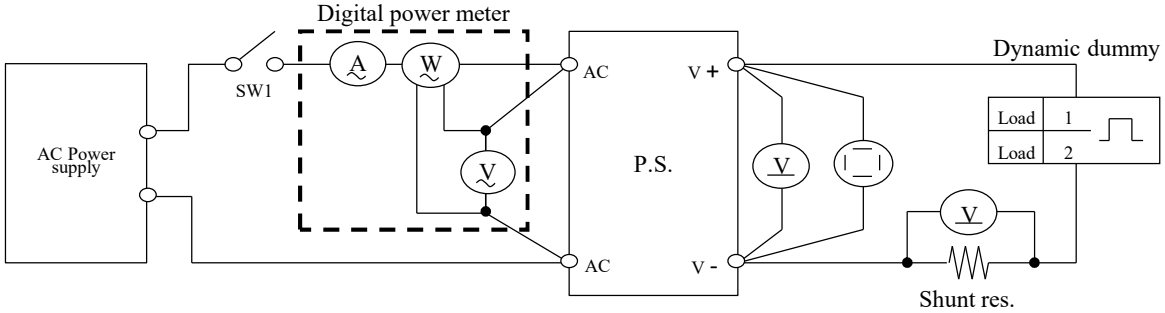
Circuit 1 used for determination

- Steady state data
- Warm up voltage drift characteristics
- Hold up time characteristics
- Output rise characteristics
- Output fall characteristics
- Over current protection (OCP) characteristics
- Over voltage protection (OVP) characteristics
- Response to brown out characteristics
- Input current waveform

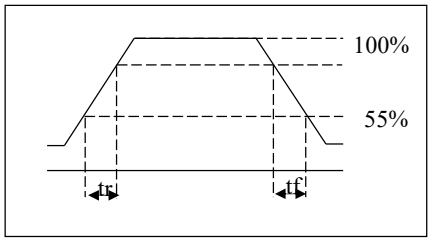


Circuit 2 used for determination

- Dynamic load response characteristics

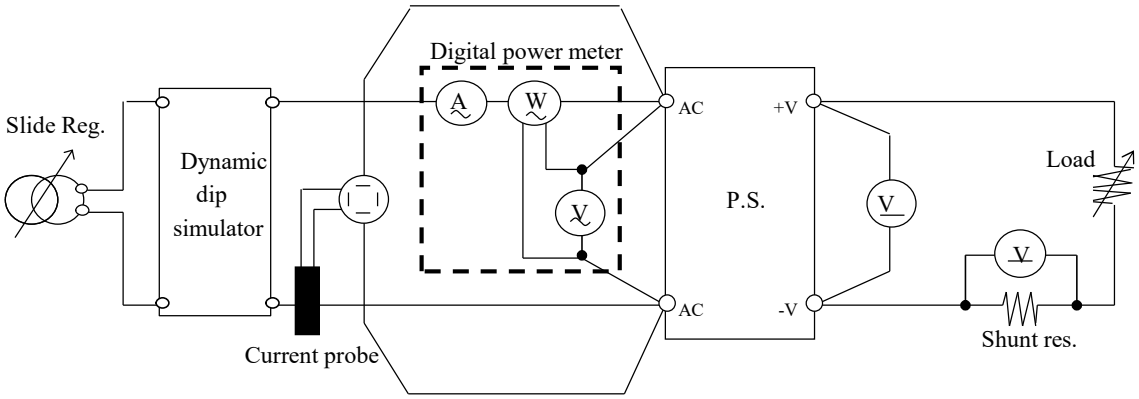


Output current waveform
Iout 50% <==> 100%



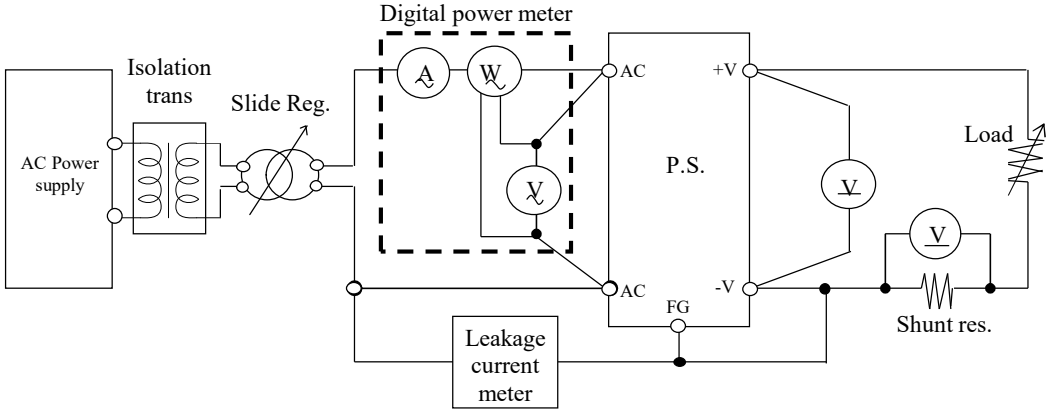
Circuit 3 used for determination

・ Inrush current waveform



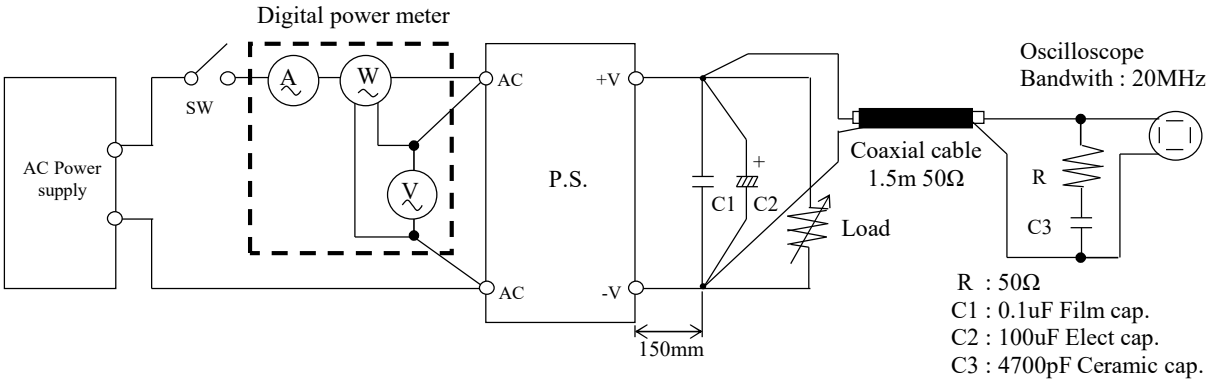
Circuit 4 used for determination

・ Leakage current characteristics



Circuit 5 used for determination

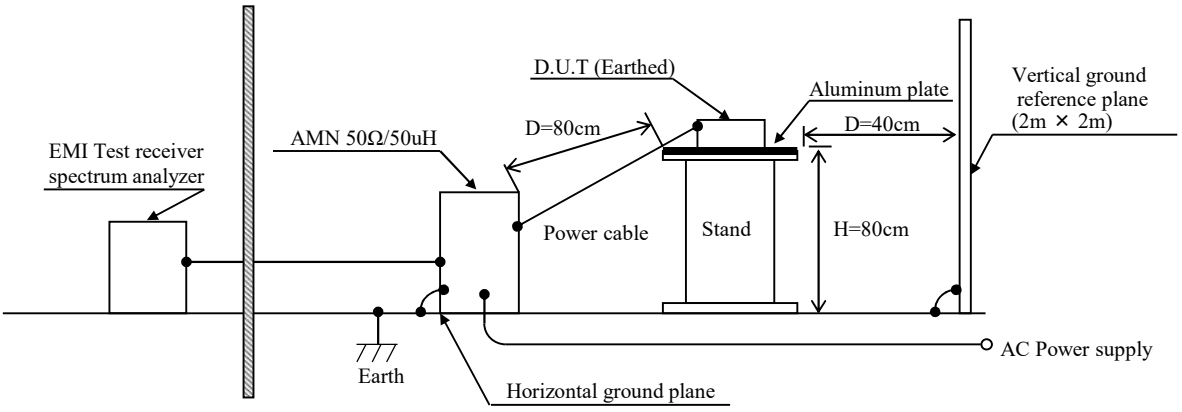
・Output ripple and noise waveform



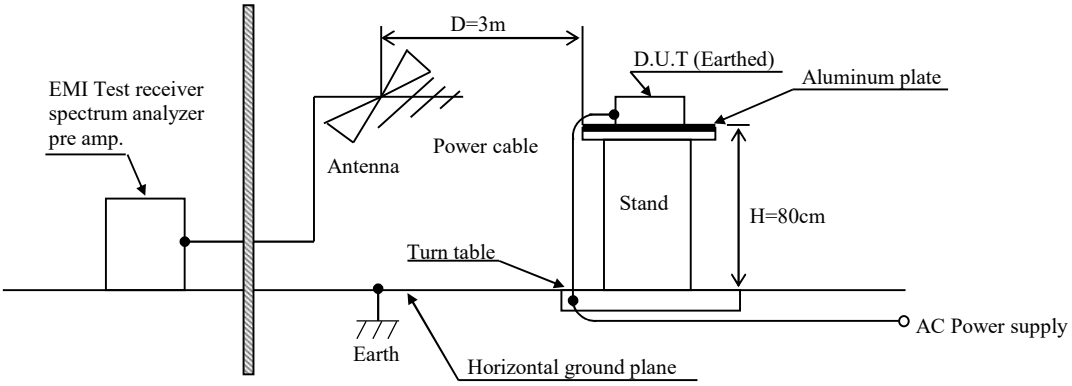
Configuration used for determination

・Electro-Magnetic Interference characteristics

(a) Conducted Emission



(b) Radiated Emission



1.2 List of equipment used

		MANUFACTURER	MODEL NO.
1	DIGITAL STORAGE OSCILLOSCOPE	YOKOGAWA ELECT.	DLM2054
2	DIGITAL MULTIMETER	KEYSIGHT	34970A
3	DIGITAL POWER METER	YOKOGAWA ELECT.	WT310
4	CURRENT PROBE	YOKOGAWA ELECT.	701930
5	POWER SUPPLY	YOKOGAWA ELECT.	701934
6	DYNAMIC DUMMY LOAD	CHROMA	63030/63203A/63640
7	AC SOURCE	KIKUSUI	PCR4000LE
8	EARTH LEAKAGE CURRENT METER	SIMPSON	228
9	CONTROLLED TEMP. CHAMBER	TABAI-ESPEC	SH-662
10	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESR3
11	LISN	ROHDE & SCHWARZ	ENV216
12	BROADBAND ANTENNA	SCHWARZBECK	VULB9163
13	LINE SUG SIMULATOR	TAKAMISAWA	PSA-210
14	SOUND CALIBRATOR	BRUEL AND KJAER	TYPE 4231
15	AUDIO ANALYZER	BRUEL AND KJAER	TYPE 3560-C

1.3 Load conditions

*Output derating is needed when input voltage is less than 90VAC.

Output voltage : 12V, 24V, 36V, 48V

Iout: Full load	12V	24V	36V	48V
50%	33.35A	20.85A	13.9A	10.45A
100%	66.7A	41.7A	27.8A	20.9A
Peak	83.4A	-	-	-

2. Characteristics

2.1 Steady state data

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

12V

1. Regulation - line and load Condition Ta : 25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	12.006V	11.992V	11.984V	12.012V	28mV	0.233%
50%	11.994V	11.987V	11.983V	11.982V	12mV	0.100%
100%	11.973V	11.964V	11.962V	11.961V	12mV	0.100%
Peak	11.962V	11.951V	11.949V	11.948V	3mV	0.025%
Load	44mV	41mV	35mV	64mV		
regulation	0.367%	0.342%	0.292%	0.533%		

2. Temperature drift Conditions Vin : 115 VAC
Iout : 100 % (66.7A)

Ta	-20℃	+25℃	+40℃	temperature stability	
Vout	12.035V	11.964V	11.939V	96mV	0.800%

3. Start up voltage and Drop out voltage Conditions Ta : 25 ℃
Iout : 100 % (66.7A)

Start up voltage (Vin)	78.5VAC
Drop out voltage (Vin)	77.4VAC

24V

1. Regulation - line and load Condition Ta : 25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	23.998V	23.991V	23.988V	24.023V	35mV	0.146%
50%	24.004V	24.001V	24.001V	24.001V	3mV	0.013%
100%	23.990V	23.984V	23.984V	23.983V	1mV	0.004%
Load	14mV	17mV	17mV	40mV		
regulation	0.058%	0.071%	0.071%	0.167%		

2. Temperature drift Conditions Vin : 115 VAC
Iout : 100 % (41.7A)

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	23.999V	23.984V	23.937V	62mV	0.258%

3. Start up voltage and Drop out voltage Conditions Ta : 25 ℃
Iout : 100 % (41.7A)

Start up voltage (Vin)	78.7VAC
Drop out voltage (Vin)	77.1VAC

36V

1. Regulation - line and load

Condition Ta : 25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	36.059V	36.066V	36.049V	36.050V	17mV	0.047%
50%	35.995V	35.982V	35.980V	35.980V	15mV	0.042%
100%	35.975V	35.965V	35.963V	35.966V	3mV	0.008%
Load regulation	84mV	101mV	86mV	84mV		
	0.233%	0.281%	0.239%	0.233%		

2. Temperature drift

Conditions Vin : 115 VAC
Iout : 100 % (27.8A)

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	36.060V	35.966V	35.839V	221mV	0.614%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 ℃
Iout : 100 % (27.8A)

Start up voltage (Vin)	78.7VAC
Drop out voltage (Vin)	77.5VAC

48V

1. Regulation - line and load

Condition Ta : 25 ℃

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	line regulation	
0%	48.054V	48.035V	48.038V	48.040V	19mV	0.040%
50%	48.008V	47.992V	47.988V	47.989V	20mV	0.042%
90%,100%	47.991V	47.974V	47.975V	47.975V	1mV	0.002%
Load regulation	63mV	61mV	63mV	65mV		
	0.131%	0.127%	0.131%	0.135%		

2. Temperature drift

Conditions Vin : 115 VAC
Iout : 100 % (20.9A)

Ta	-20℃	+25℃	+50℃	temperature stability	
Vout	48.121V	47.975V	47.826V	295mV	0.615%

3. Start up voltage and Drop out voltage

Conditions Ta : 25 ℃
Iout : 100 % (20.9A)

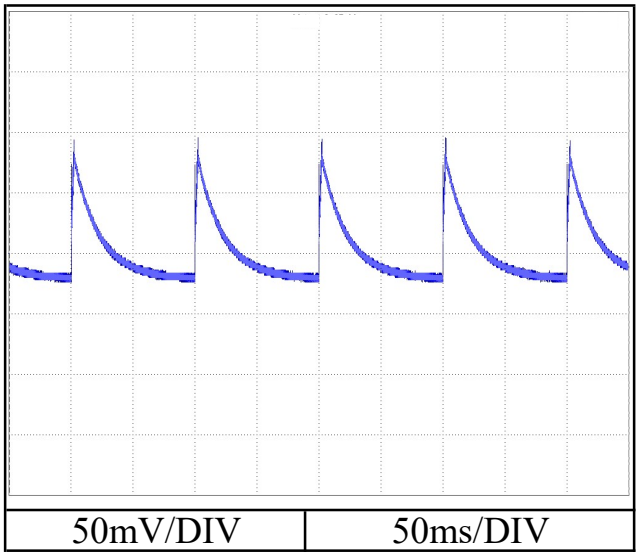
Start up voltage (Vin)	78.7VAC
Drop out voltage (Vin)	76.8VAC

(2) Output ripple and noise waveform

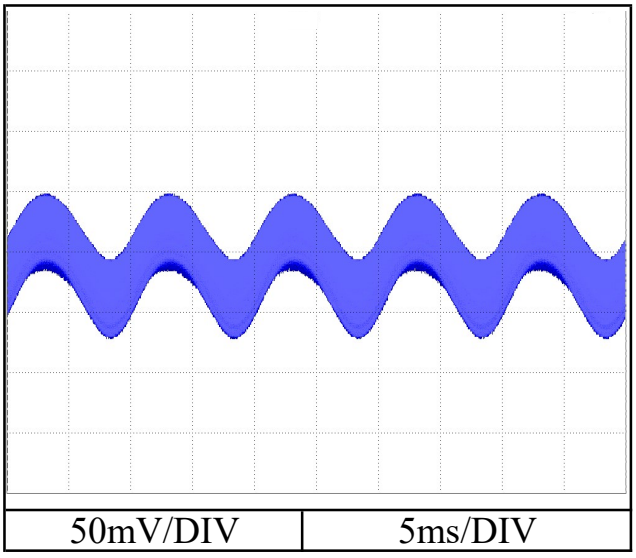
Conditions Vin : 115 VAC
Ta : 25 °C
Iout : 100 %

12V

Iout : 0 %



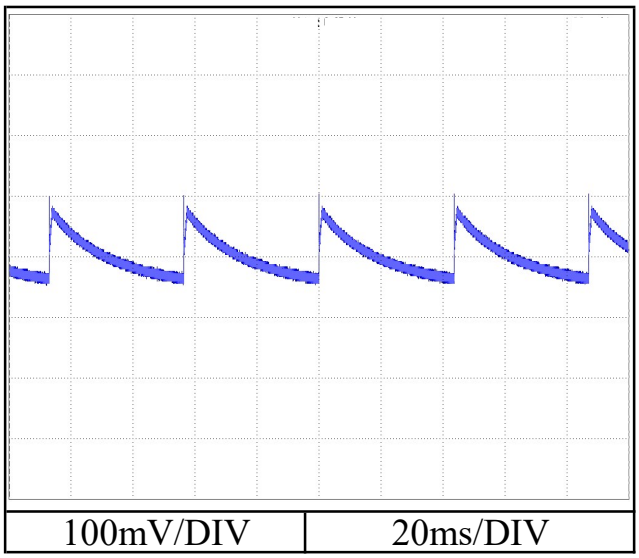
50mV/DIV | 50ms/DIV



50mV/DIV | 5ms/DIV

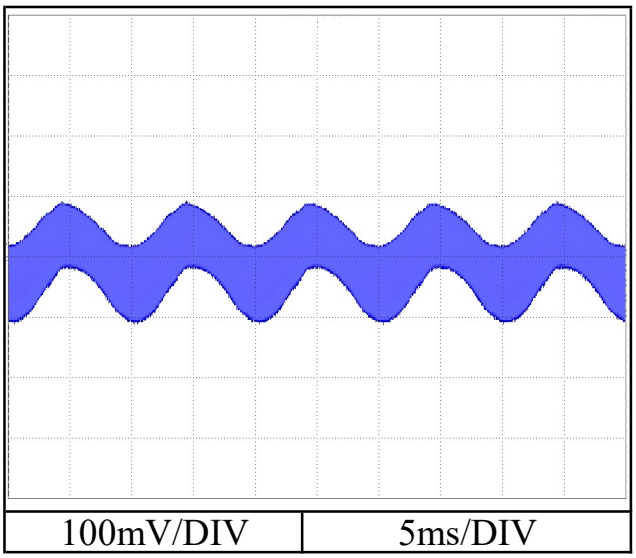
24V

Iout : 0 %



100mV/DIV | 20ms/DIV

Iout : 100 %



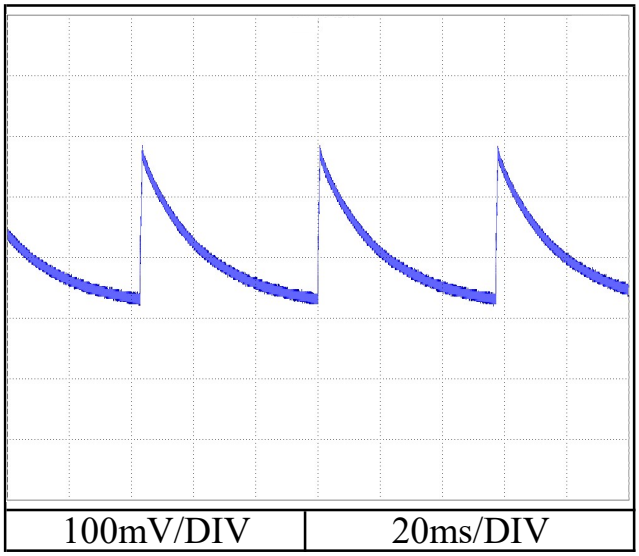
100mV/DIV | 5ms/DIV

(2) Output ripple and noise waveform

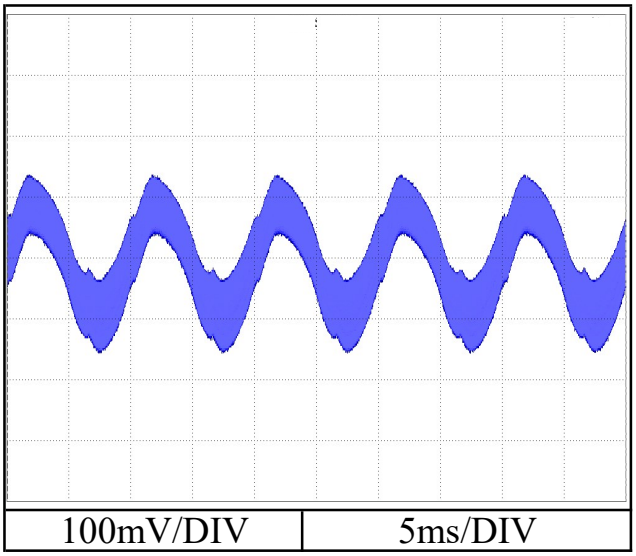
Conditions Vin : 115 VAC
Ta : 25 °C

36V

Iout : 0 %

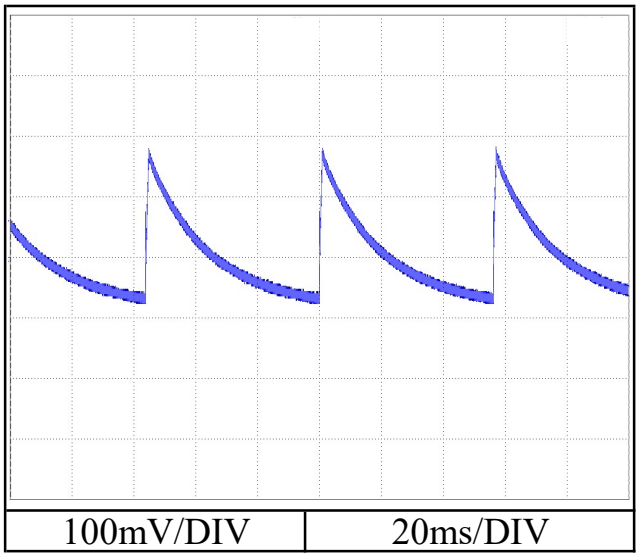


Iout : 100 %

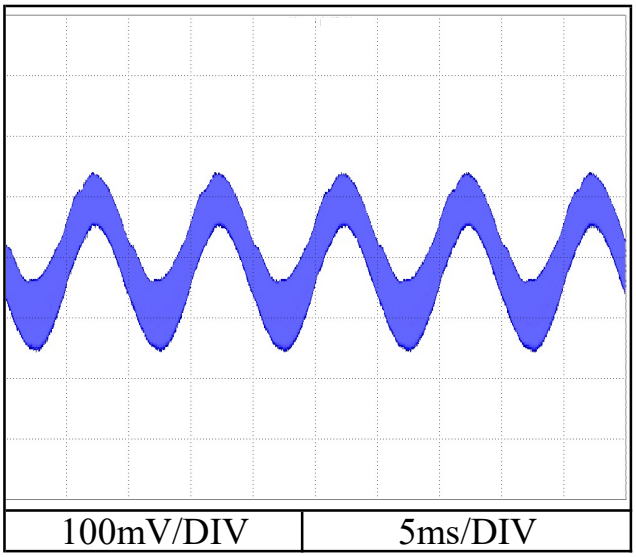


48V

Iout : 0 %



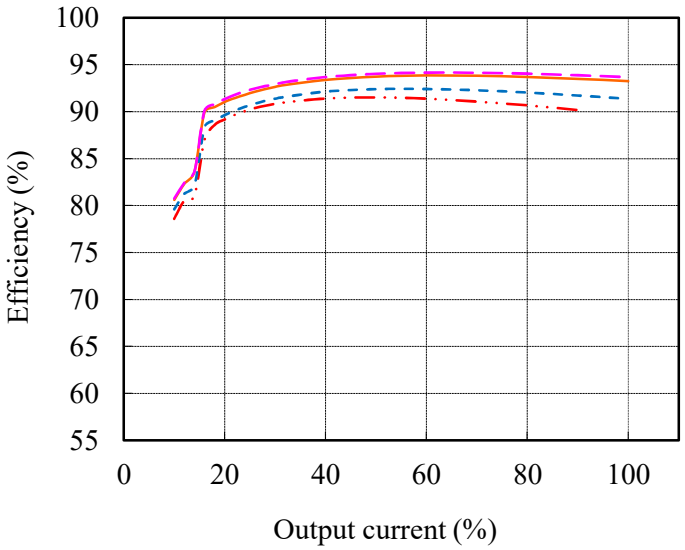
Iout : 100 %

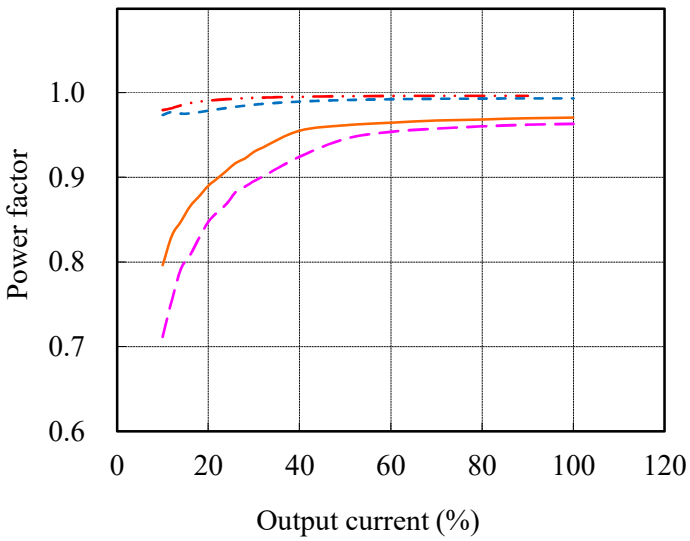


(3) Efficiency and Power factor vs. Output current

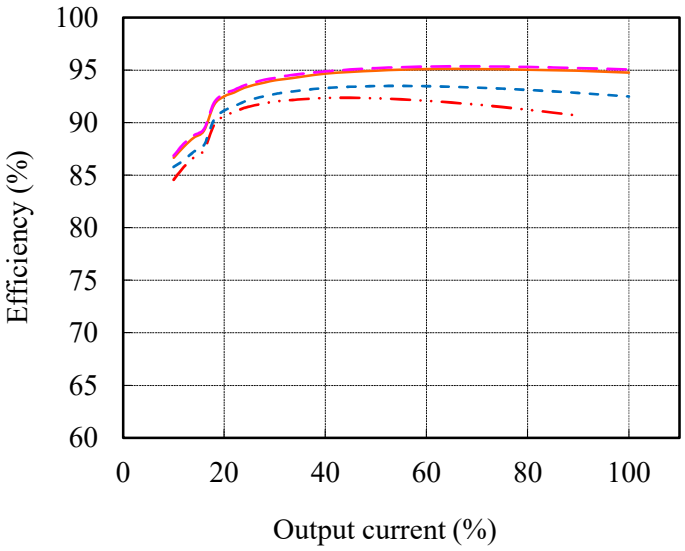
Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

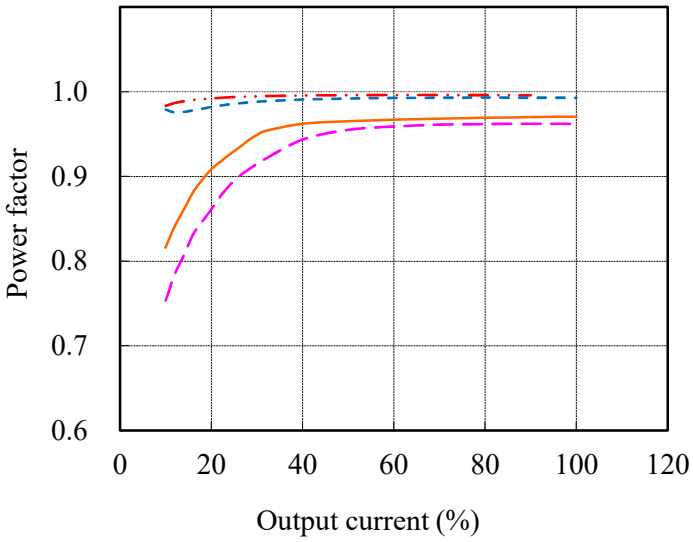
12V





24V

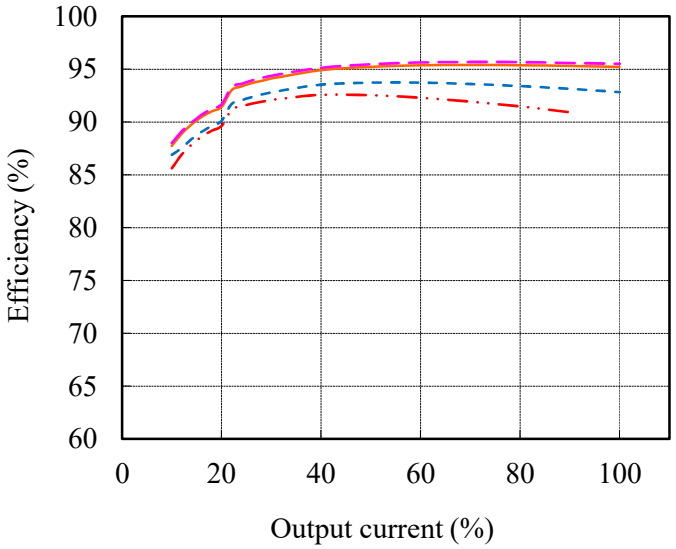


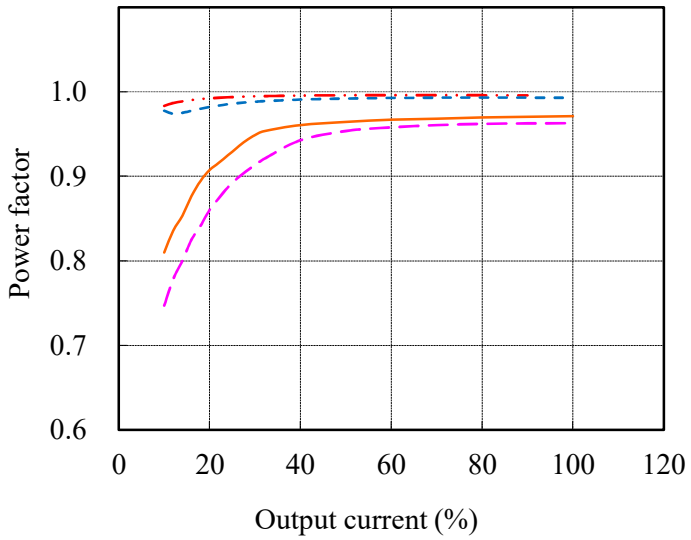


(3) Efficiency and Power factor vs. Output current

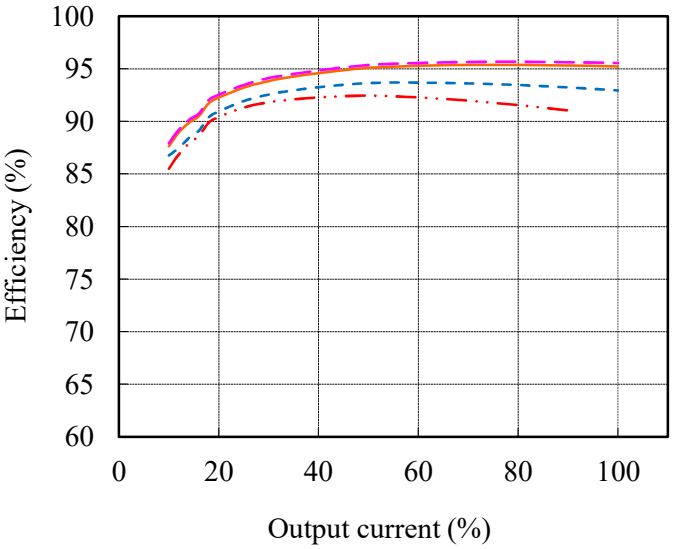
Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

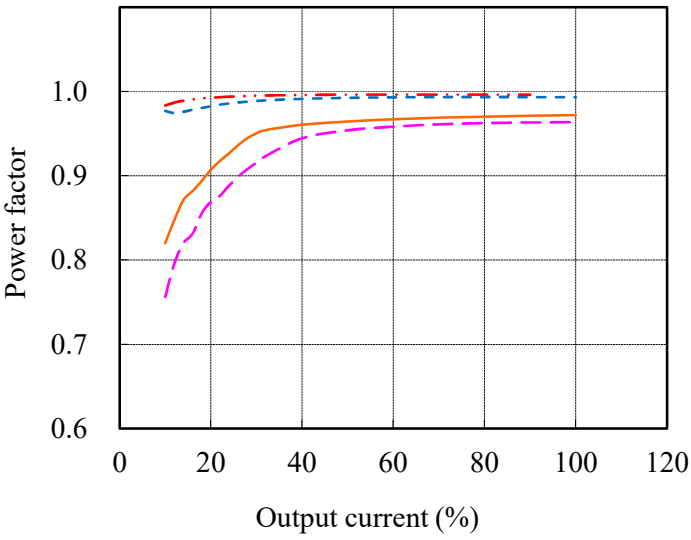
36V





48V



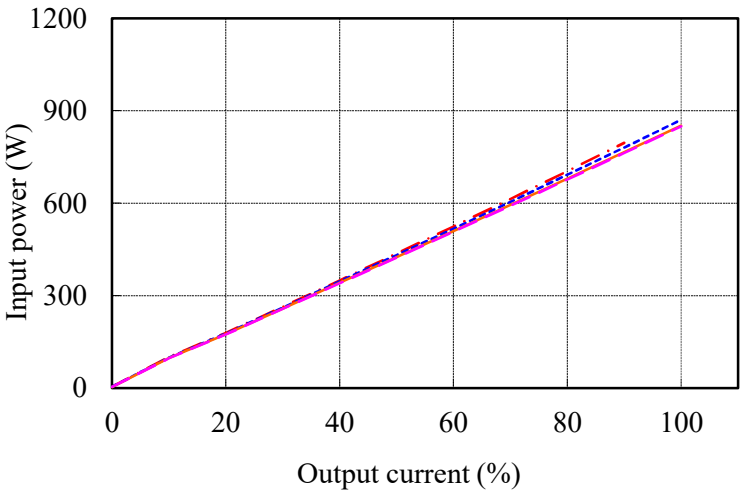


(4) Input power vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

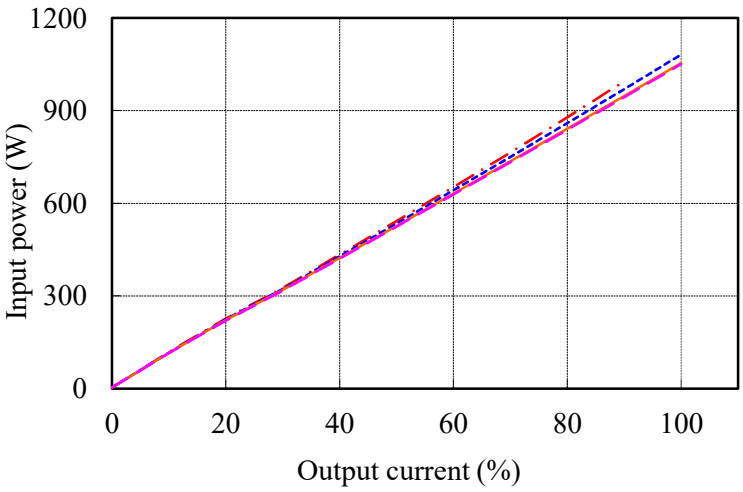
12V

Vin	Input power	
	Iout : 0%	Remote OFF *1
85VAC	4.04W	0.31W
115VAC	4.19W	0.35W
230VAC	3.22W	0.62W
265VAC	3.27W	0.73W



24V

Vin	Input power	
	Iout : 0%	Remote OFF *1
85VAC	4.28W	0.30W
115VAC	4.44W	0.34W
230VAC	3.49W	0.60W
265VAC	3.54W	0.71W



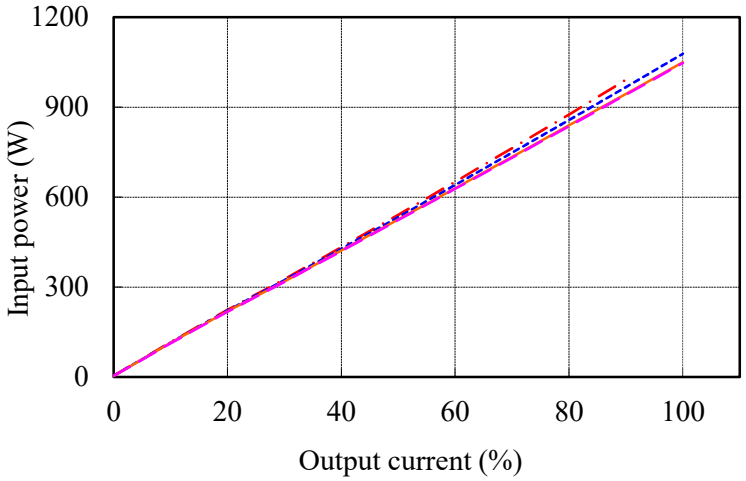
*1.Remote off function is with GUS1000/R model,stantard model doesn't have remote on/off function.

(4) Input power vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

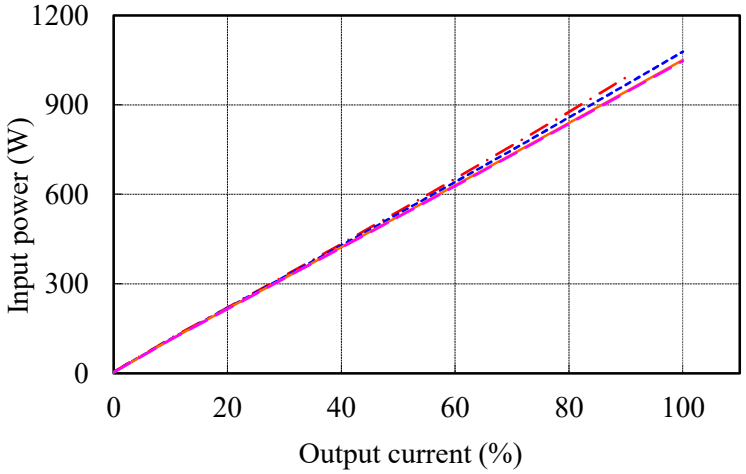
36V

Vin	Input power	
	Iout : 0%	Remote OFF *1
85VAC	4.22W	0.31W
115VAC	4.47W	0.35W
230VAC	3.51W	0.60W
265VAC	3.46W	0.72W



48V

Vin	Input power	
	Iout : 0%	Remote OFF *1
85VAC	4.67W	0.31W
115VAC	4.66W	0.35W
230VAC	3.66W	0.61W
265VAC	3.44W	0.72W



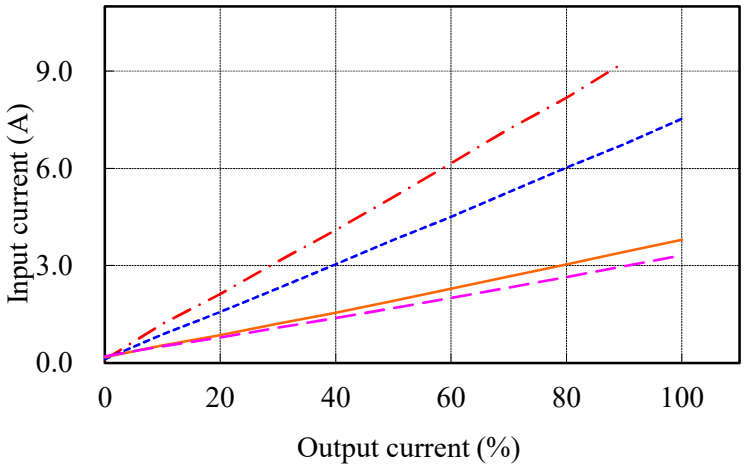
*1.Remote off function is with GUS1000/R model,stantard model doesn't have remote on/off function.

(5) Input current vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

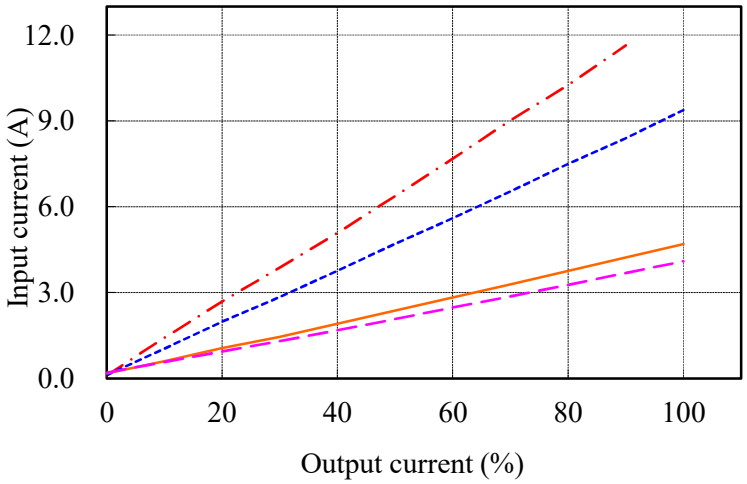
12V

Vin	Input current	
	Iout : 0%	Remote OFF *1
85VAC	0.11A	0.06A
115VAC	0.12A	0.08A
230VAC	0.18A	0.17A
265VAC	0.20A	0.20A



24V

Vin	Input current	
	Iout : 0%	Remote OFF *1
85VAC	0.11A	0.06A
115VAC	0.12A	0.09A
230VAC	0.18A	0.17A
265VAC	0.20A	0.20A



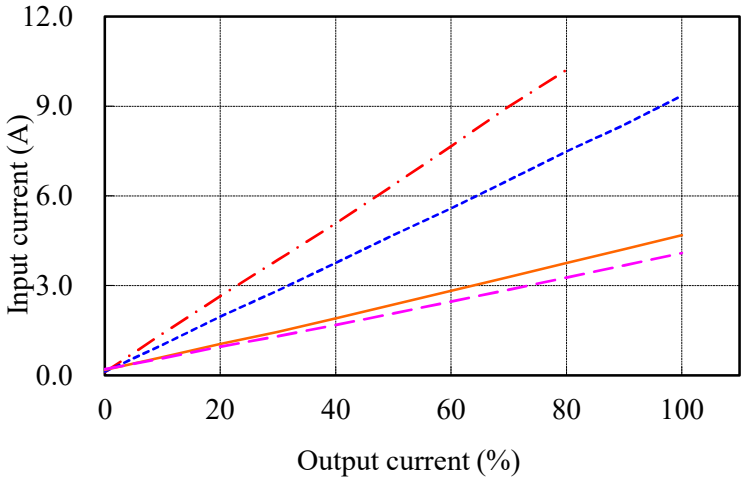
*1.Remote off function is with GUS1000/R model,stantard model doesn't have remote on/off function.

(5) Input current vs. Output current

Conditions Vin : 85 VAC
115 VAC
230 VAC
265 VAC
Ta : 25 ℃

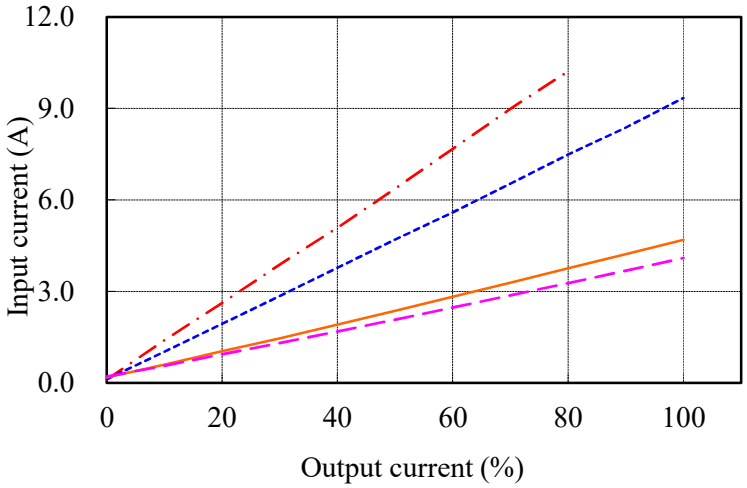
36V

Vin	Input current	
	Iout : 0%	Remote OFF *1
85VAC	0.11A	0.06A
115VAC	0.12A	0.09A
230VAC	0.18A	0.17A
265VAC	0.21A	0.20A



48V

Vin	Input current	
	Iout : 0%	Remote OFF *1
85VAC	0.11A	0.06A
115VAC	0.12A	0.09A
230VAC	0.18A	0.17A
265VAC	0.21A	0.20A

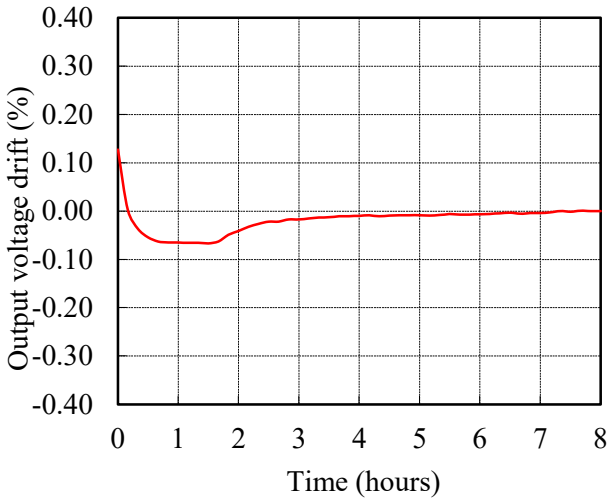


*1.Remote off function is with GUS1000/R model,stantard model doesn't have remote on/off function.

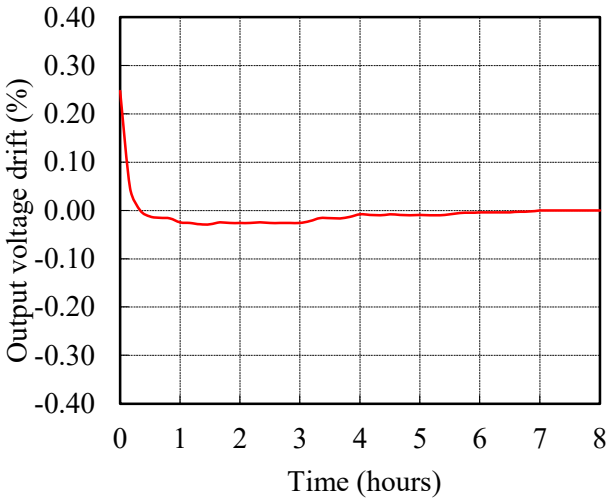
2.2 Warm up voltage drift characteristics

Conditions Vin : 115 VAC
Iout : 100 %
Ta : 25 ℃

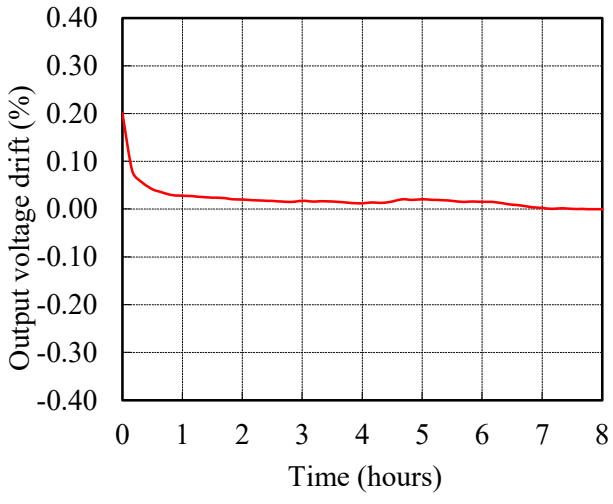
12V



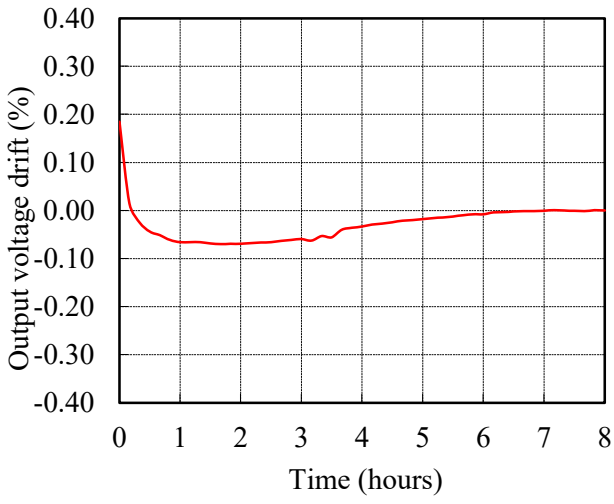
24V



36V



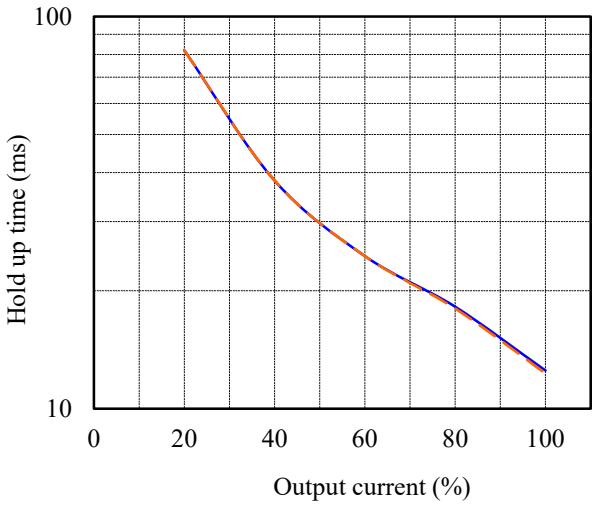
48V



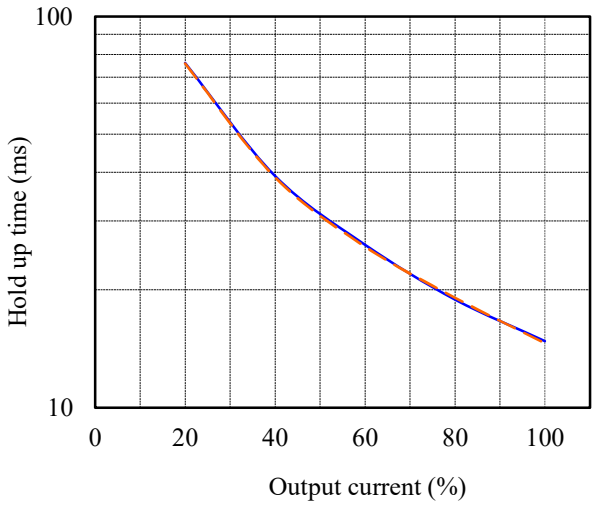
2.3 Hold up time characteristics

Conditions Vin : 115 VAC
230 VAC
Ta : 25 ℃

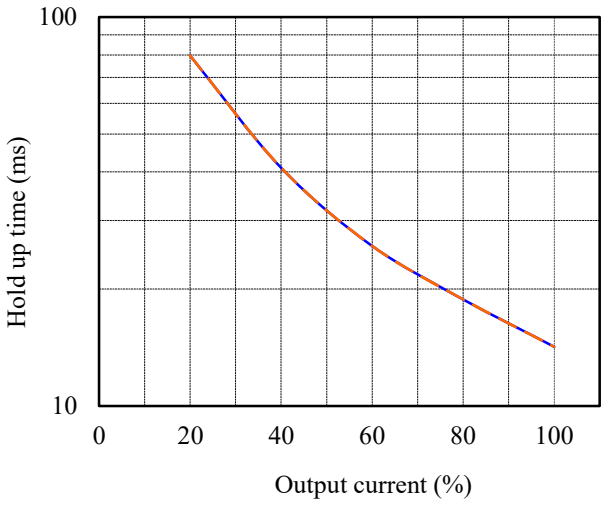
12V



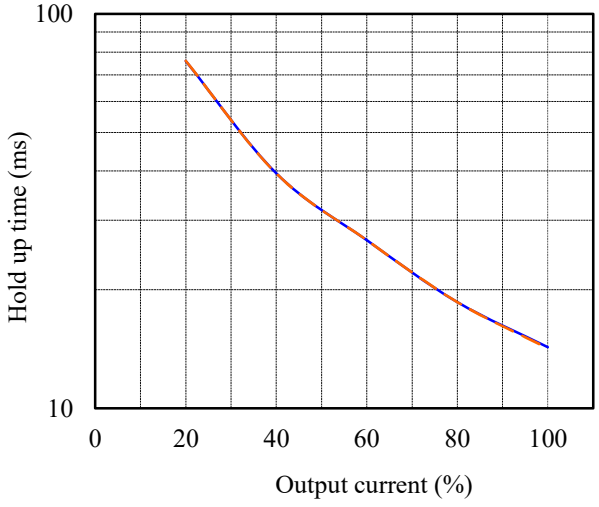
24V



36V



48V

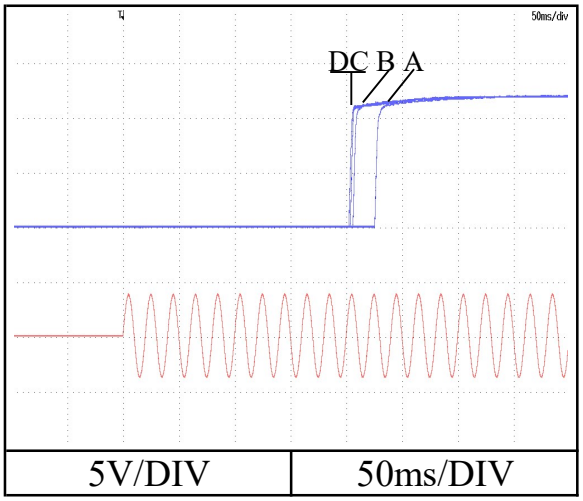


2.4 Output rise characteristics

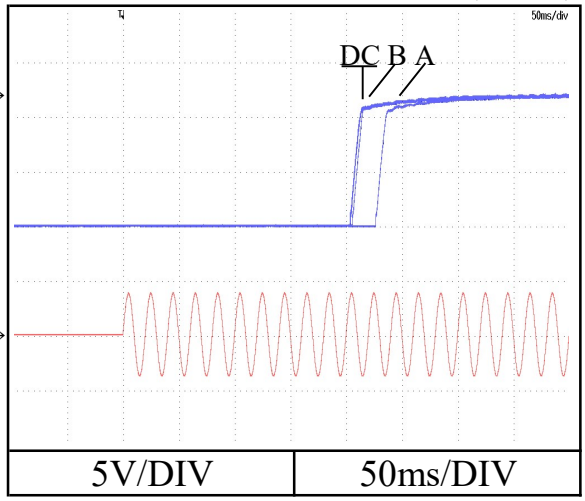
Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

12V

Iout : 0%

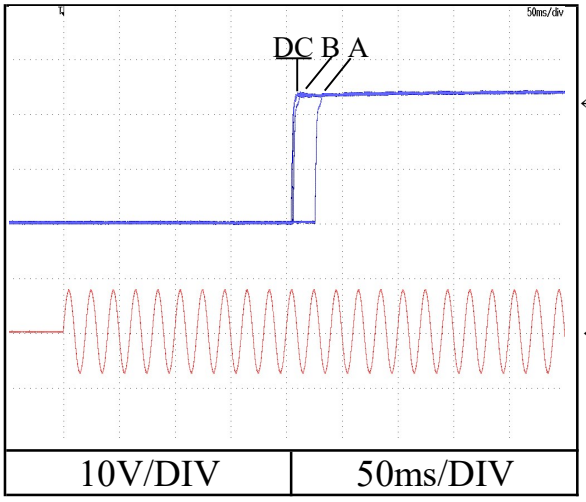


Iout :Peak (83.4A)

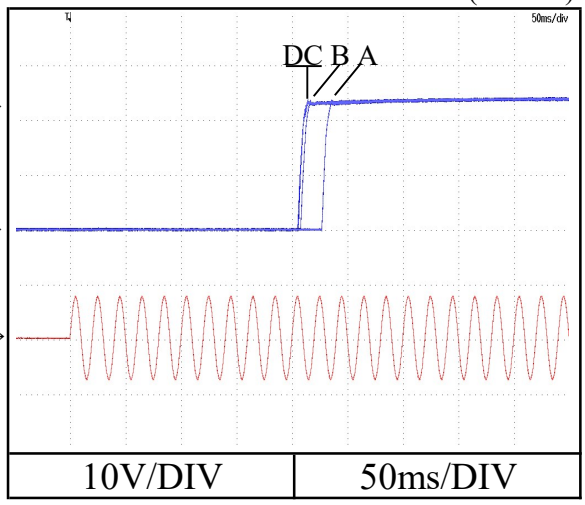


24V

Iout : 0%



Iout : 100% (41.7A)

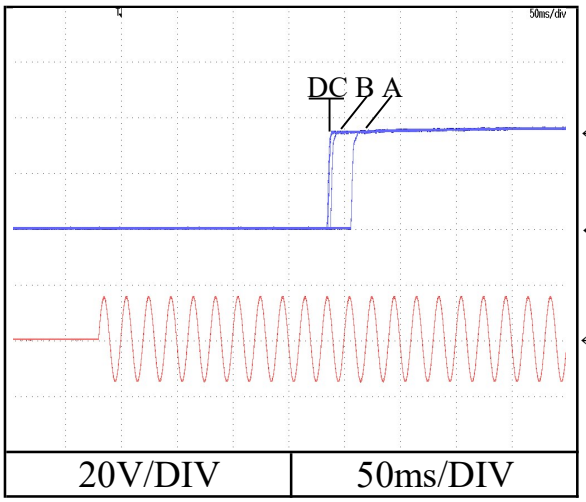


2.4 Output rise characteristics

Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

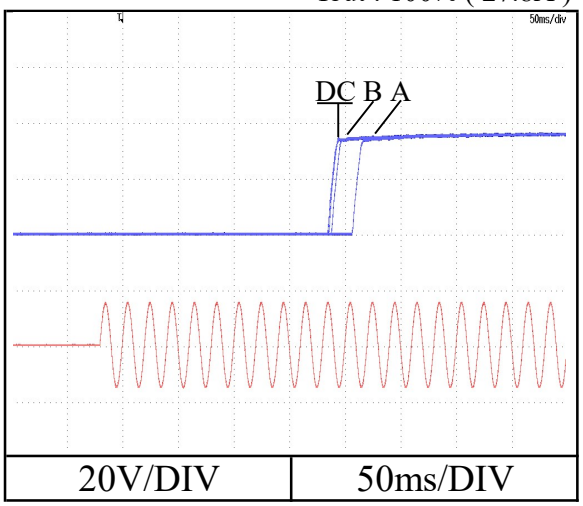
36V

Iout : 0%



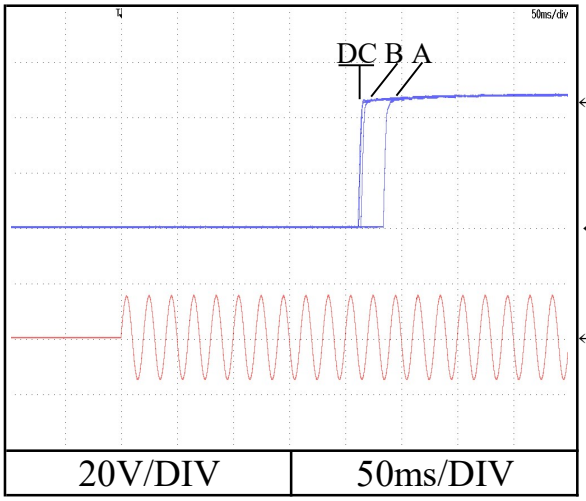
← Vout →
← 0V →
← Vin →

Iout : 100% (27.8A)



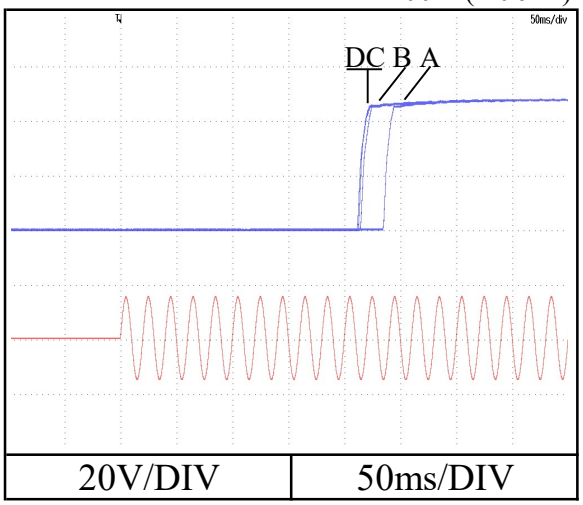
48V

Iout : 0%



← Vout →
← 0V →
← Vin →

Iout : 100% (20.9A)

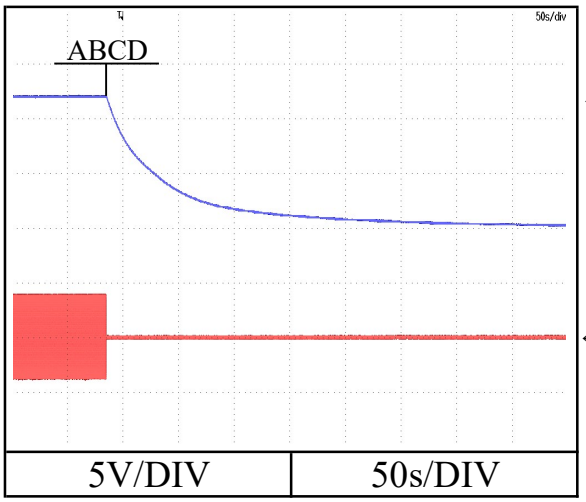


2.5 Output fall characteristics

Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

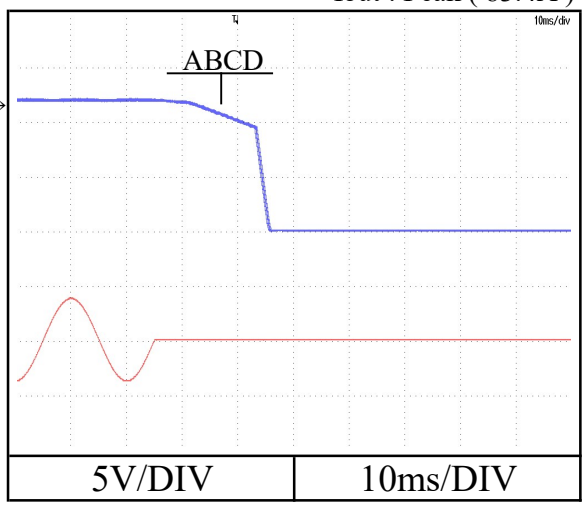
12V

Iout : 0%



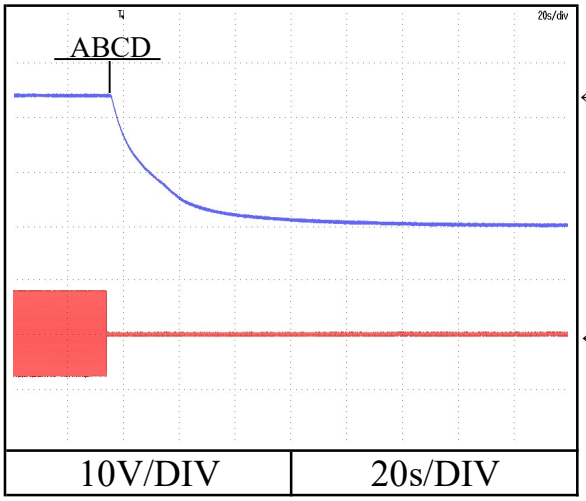
← Vout →
← 0V →
← Vin →

Iout : Peak (83.4A)



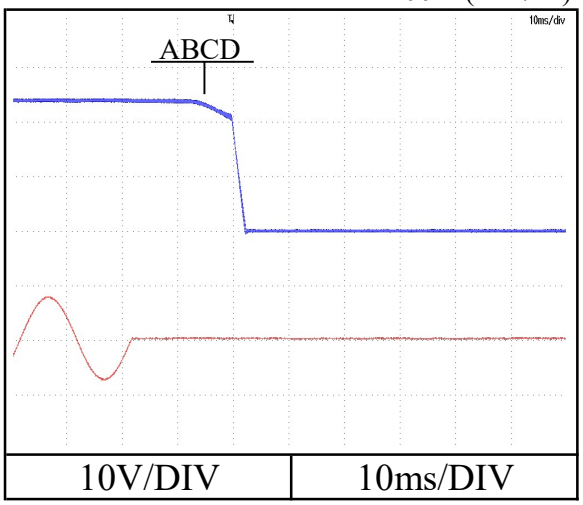
24V

Iout : 0%



← Vout →
← 0V →
← Vin →

Iout : 100% (41.7A)

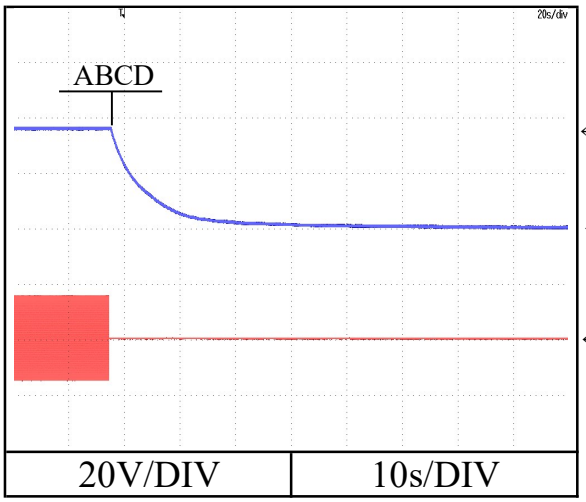


2.5 Output fall characteristics

Conditions Vin : 85 VAC (A)
115 VAC (B)
230 VAC (C)
265 VAC (D)
Ta : 25 ℃

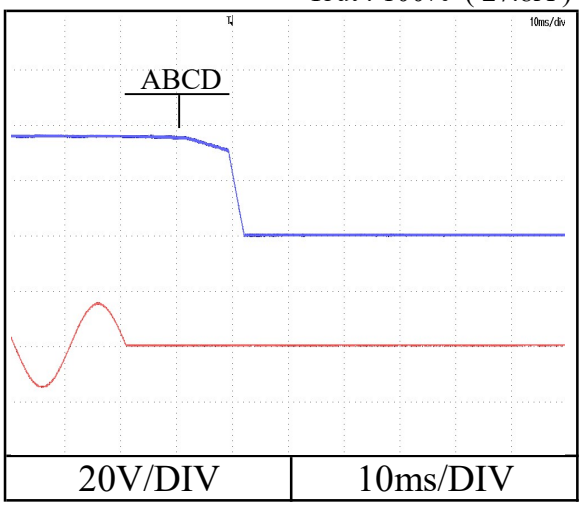
36V

Iout : 0%



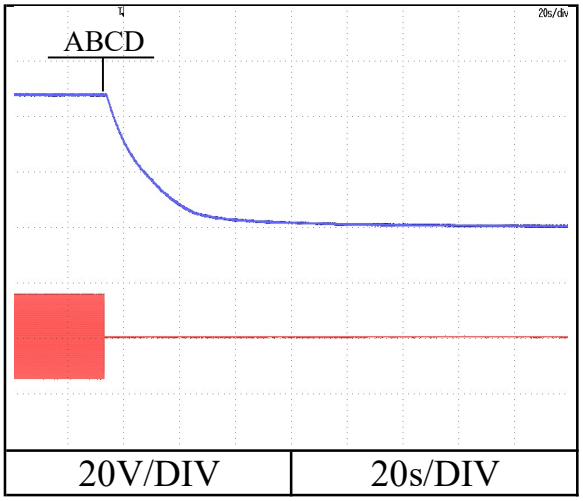
← Vout →
← 0V →
← Vin →

Iout : 100% (27.8A)



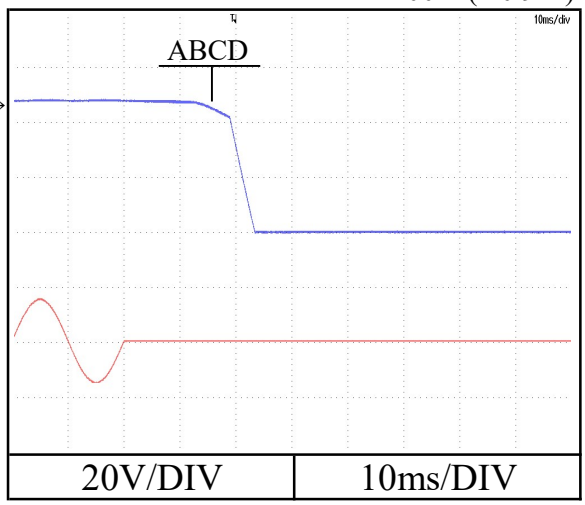
48V

Iout : 0%



← Vout →
← 0V →
← Vin →

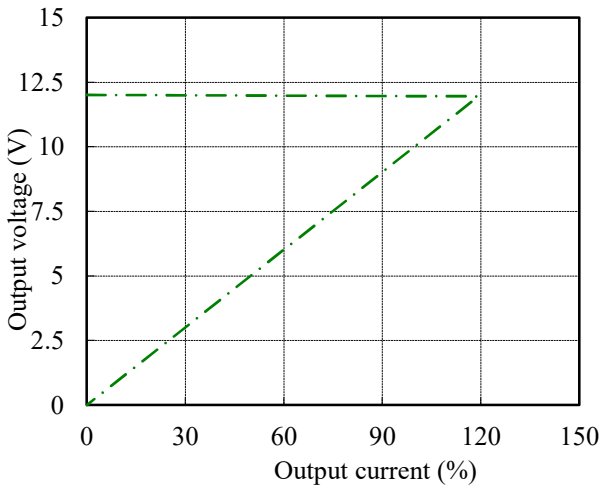
Iout : 100% (20.9A)



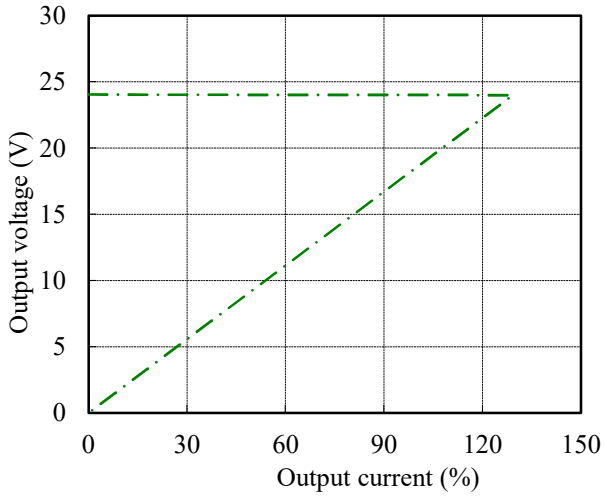
2.6 Over current protection (OCP) characteristics

Conditions Vin : 115 VAC
Ta : 25 ℃

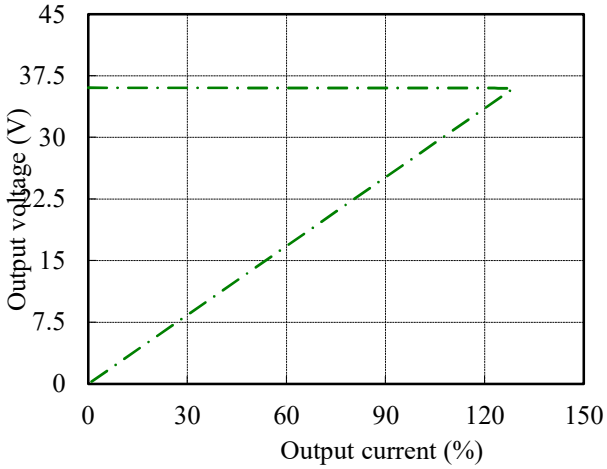
12V



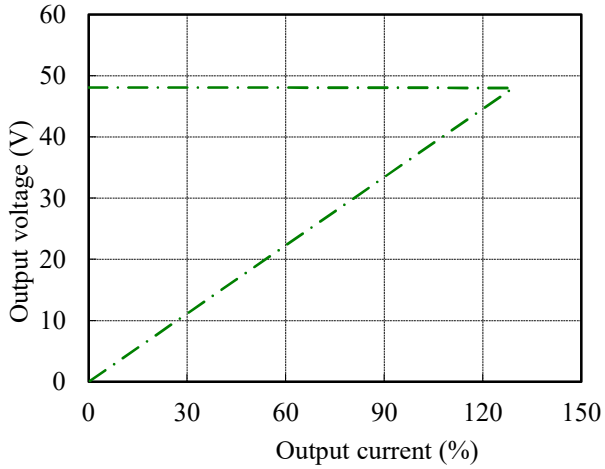
24V



36V



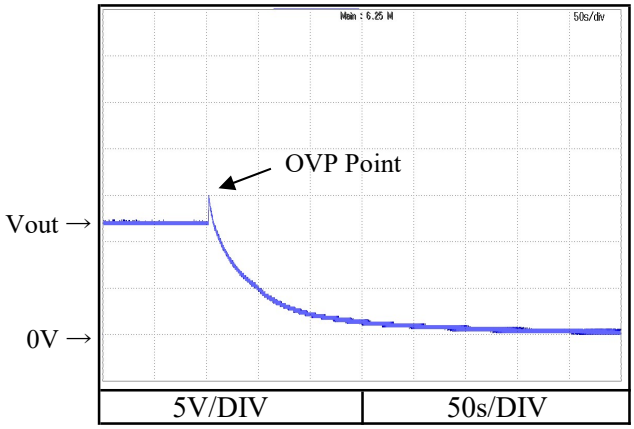
48V



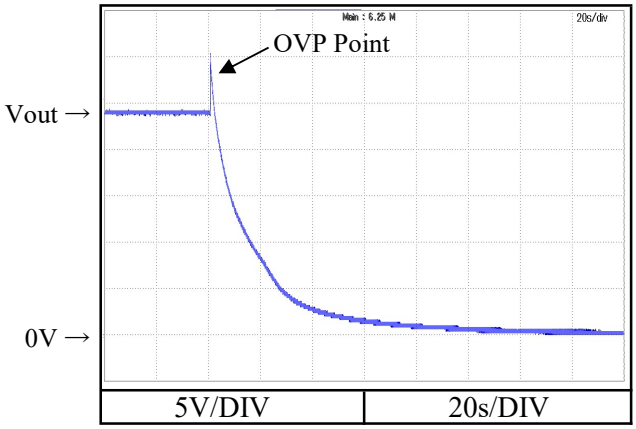
2.7 Over voltage protection (OVP) characteristics

Conditions Vin : 115 VAC
Iout : 0 %
Ta : 25 ℃

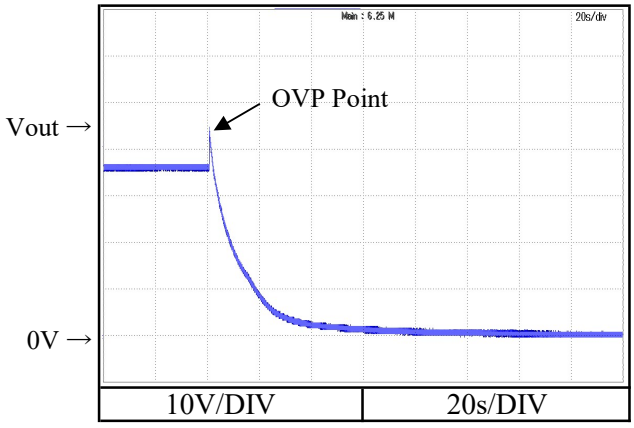
12V



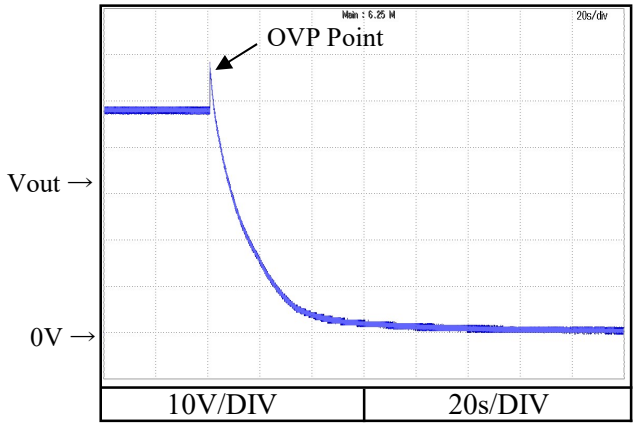
24V



36V



48V

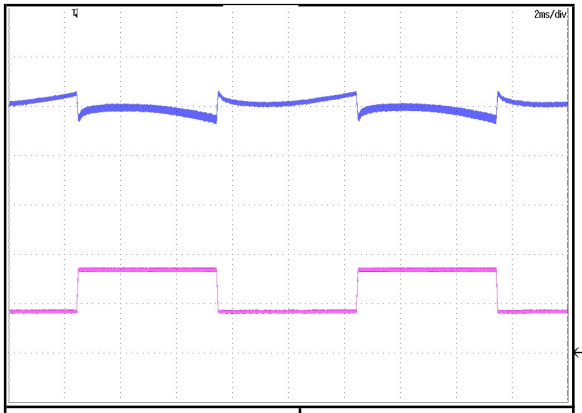


2.8 Dynamic load response characteristics

Conditions Vin : 115 VAC
Iout : 50 % ⟷100 %
(tr = tf = 50us)
Ta : 25 ℃

12V

f = 100Hz



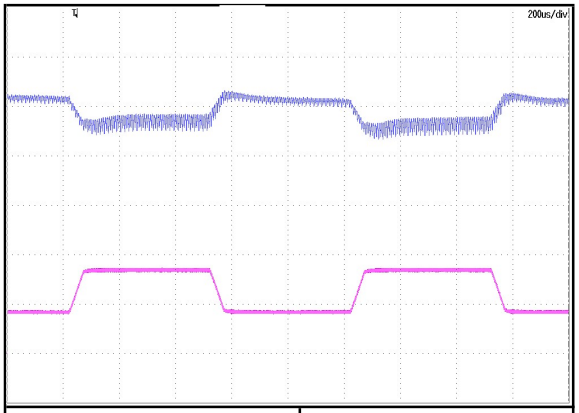
200mV/DIV	50A/DIV
2ms/DIV	
+0.52%	-0.59%

← Vout →

← Iout →

← Iout: 0% →

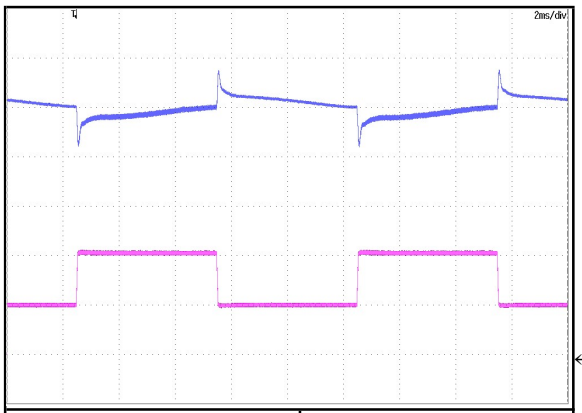
f = 1kHz



200mV/DIV	50A/DIV
200µs/DIV	
+0.54%	-1.11%

24V

f = 100Hz



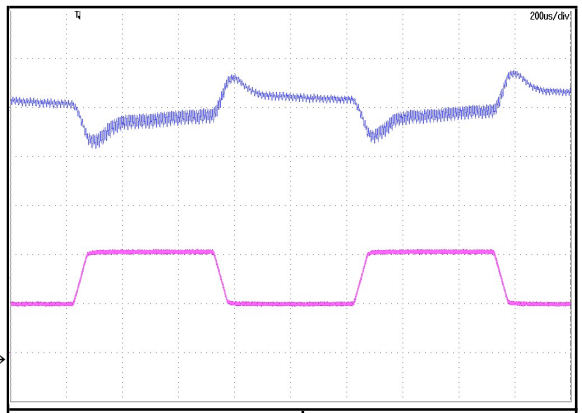
500mV/DIV	20A/DIV
2ms/DIV	
+0.64%	-0.67%

← Vout →

← Iout →

← Iout: 0% →

f = 1kHz



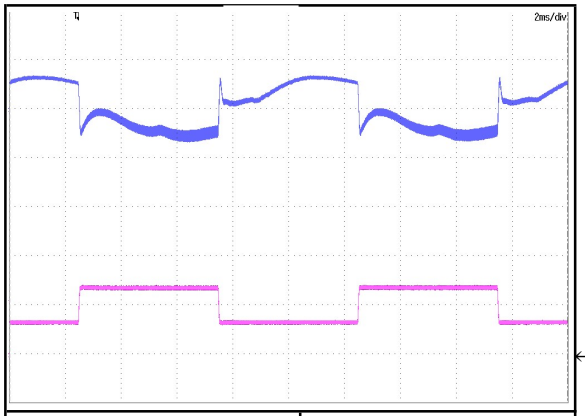
500mV/DIV	20A/DIV
200µs/DIV	
+0.63%	-0.70%

2.8 Dynamic load response characteristics

Conditions Vin : 115 VAC
Iout : 50 % ⟷100 %
(tr = tf = 50us)
Ta : 25 ℃

36V

f = 100Hz



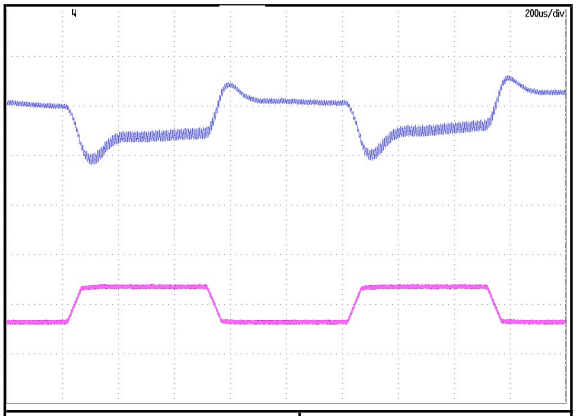
200mV/DIV	20A/DIV
2ms/DIV	
+0.37%	-0.38%

← Vout →

← Iout →

← Iout: 0% →

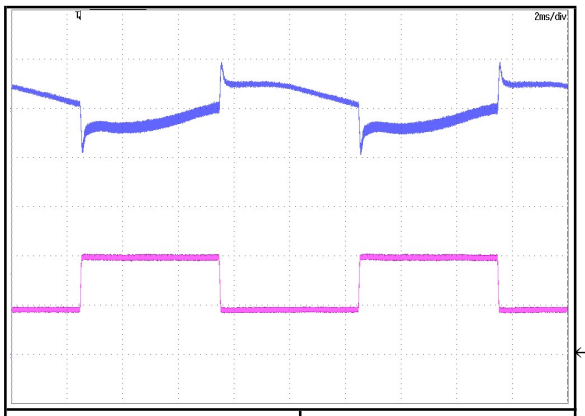
f = 1kHz



200mV/DIV	20A/DIV
200µs/DIV	
+0.34%	-0.66%

48V

f = 100Hz



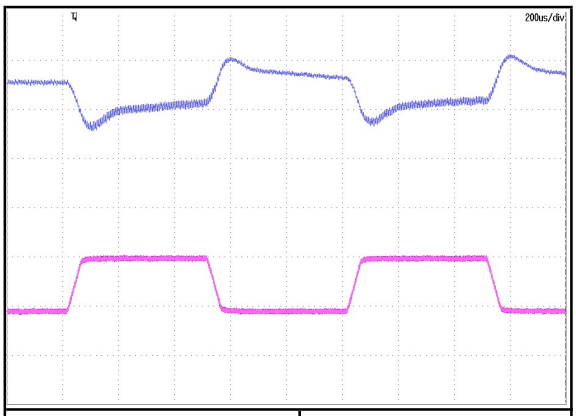
200mV/DIV	10A/DIV
2ms/DIV	
+0.39%	-0.39%

← Vout →

← Iout →

← Iout: 0% →

f = 1kHz



200mV/DIV	10A/DIV
200µs/DIV	
+0.46%	-0.19%

2.9 Response to brown out characteristics

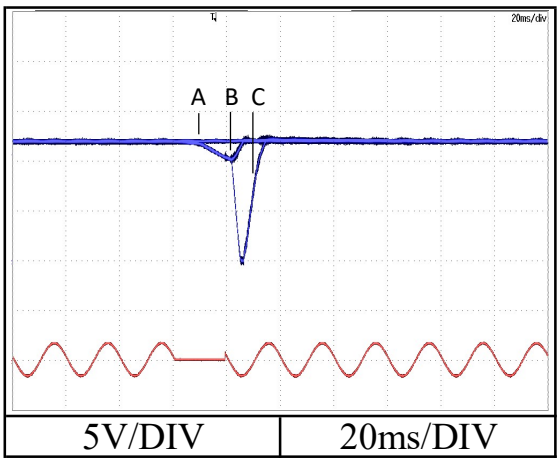
Conditions Ta : 25 ℃
Iout : 100 %

Interruption time

A : Output voltage does not drop.
B : Output voltage drop down not reaching 0V.
C : Output voltage drops until 0V.

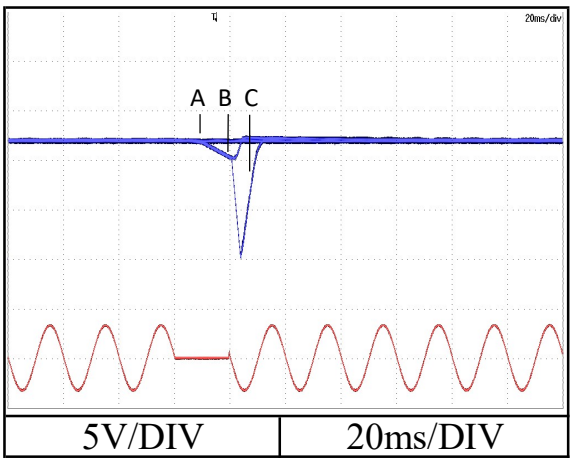
12V

Vin : 115VAC
A = 11ms, B = 18.6ms, C = 18.8ms



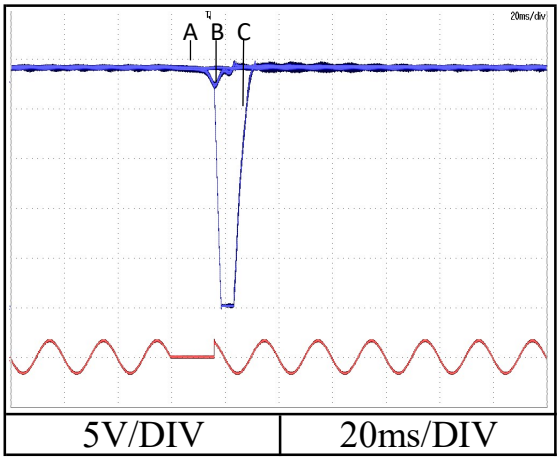
← Vout →
← 0V →
← Vin →

Vin : 230VAC
A = 11ms, B = 19.3ms, C = 19.5ms



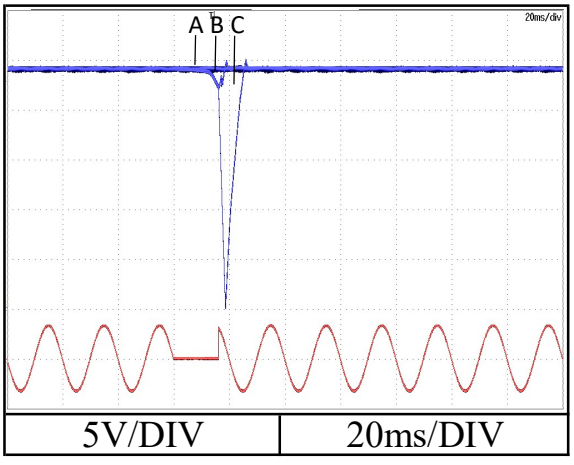
24V

Vin : 115VAC
A = 11ms, B = 16ms, C = 16.3ms



← Vout →
← 0V →
← Vin →

Vin : 230VAC
A =11ms, B = 16ms, C = 16.3ms



2.9 Response to brown out characteristics

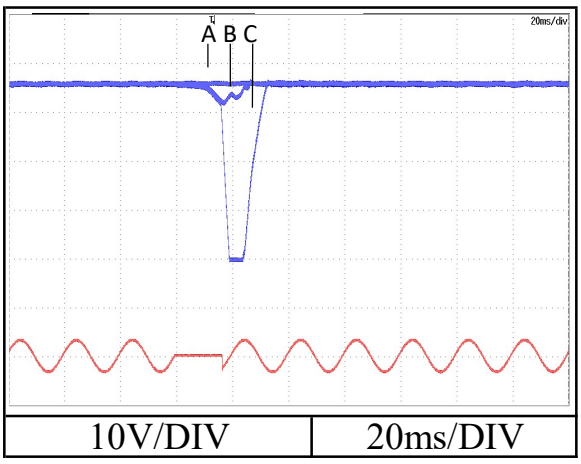
Conditions Ta : 25 ℃
Iout : 100 %

Interruption time

A : Output voltage does not drop.
B : Output voltage drop down not reaching 0V.
C : Output voltage drops until 0V.

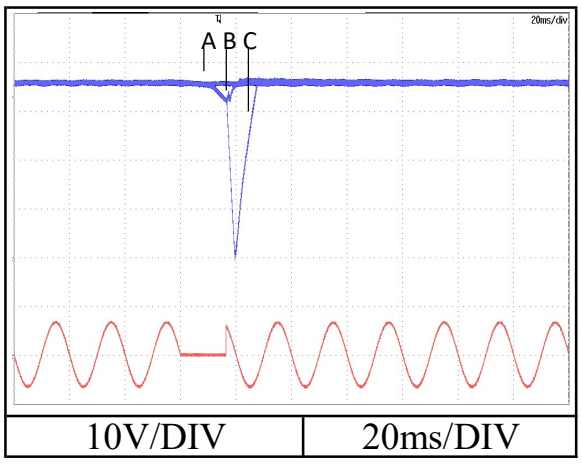
36V

Vin : 115VAC
A = 11ms, B = 16.5ms, C = 16.6ms



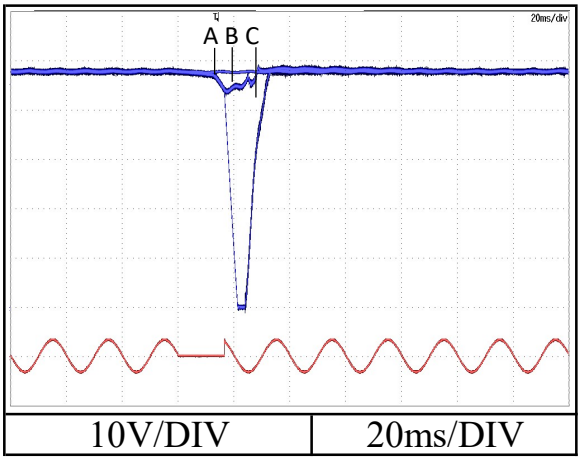
← Vout →
← 0V →
← Vin →

Vin : 230VAC
A = 11ms, B = 16.3ms, C = 16.5ms



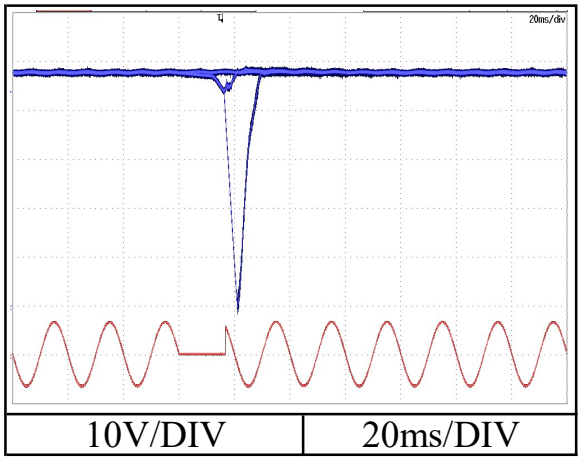
48V

Vin : 115VAC
A = 12ms, B = 16.3ms, C = 16.4ms



← Vout →
← 0V →
← Vin →

Vin : 230VAC
A = 12ms, B = 16ms, C = 16.8ms

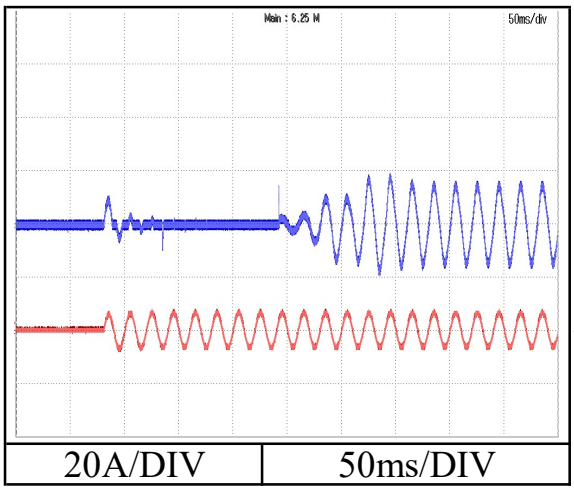


2.10 Inrush current waveform

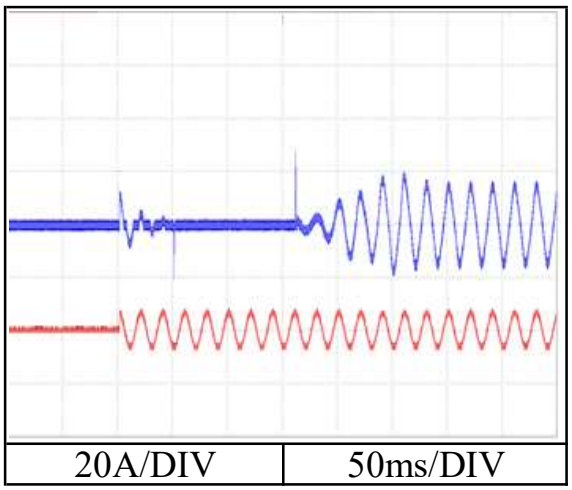
48V

Conditions Vin : 115 VAC
Iout : 100 % (20.9A)
Ta : 25 ℃

Switch on phase angle of input AC voltage
ϕ = 0°

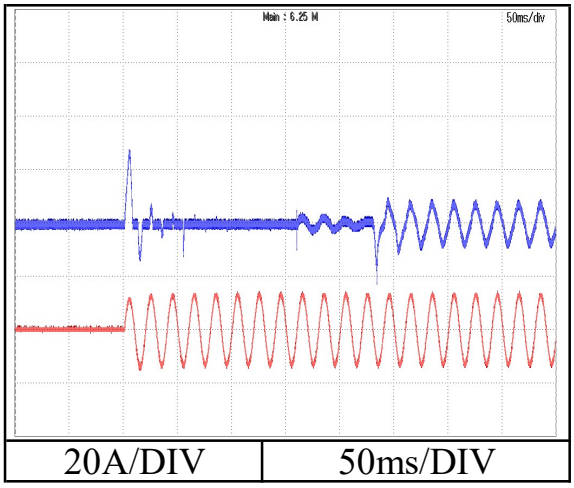


Switch on phase angle of input AC voltage
ϕ = 90°

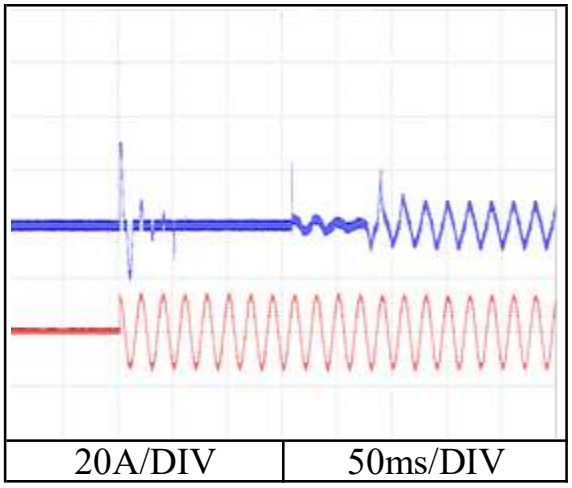


Conditions Vin : 230 VAC
Iout : 100 % (20.9A)
Ta : 25 ℃

Switch on phase angle of input AC voltage
ϕ = 0°



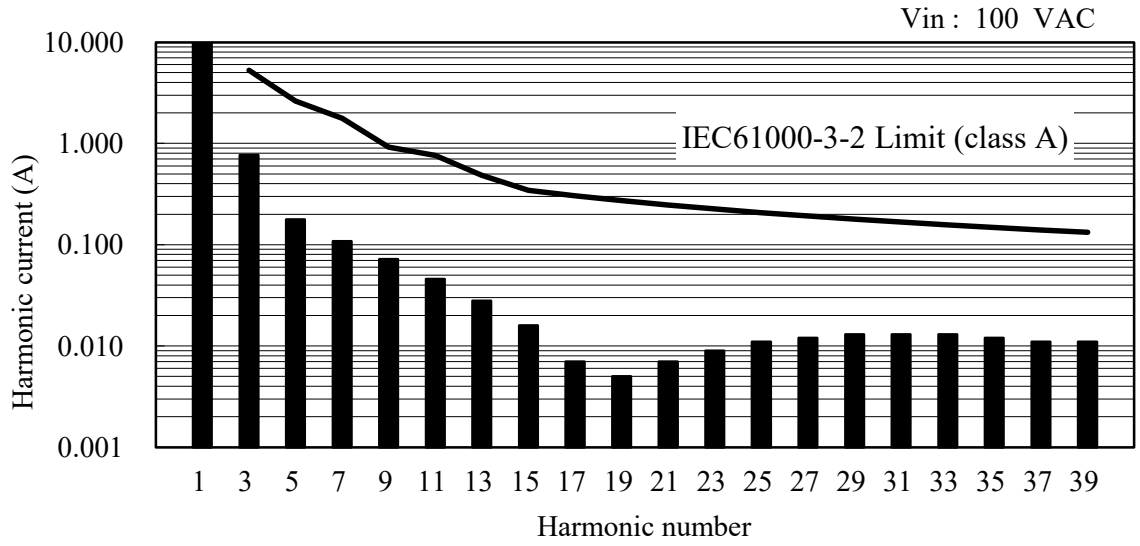
Switch on phase angle of input AC voltage
ϕ = 90°

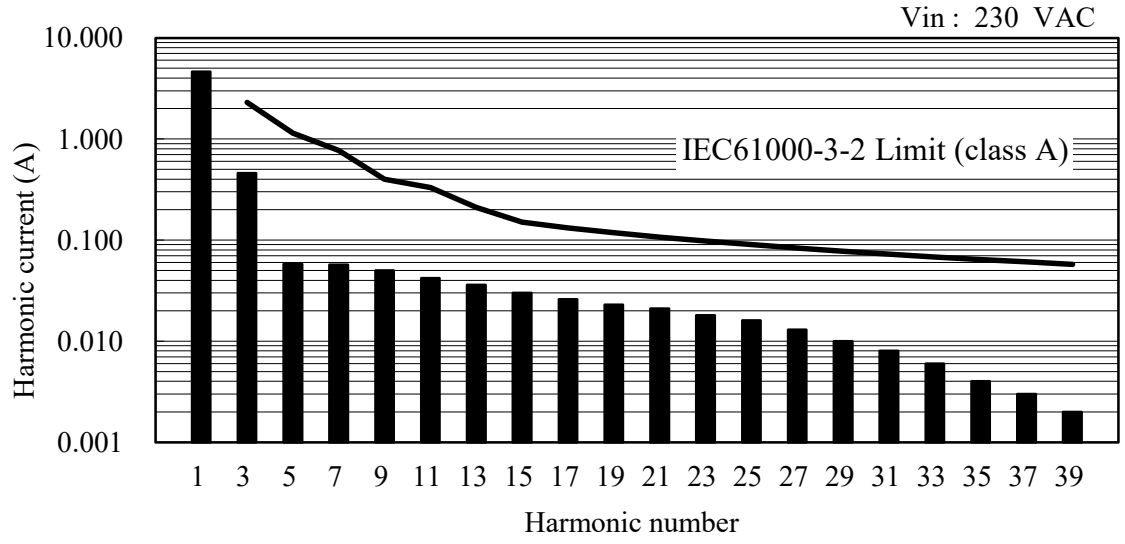


2.11 Input current harmonics

Conditions Iout : 20.9 A (100%)
Ta : 25 ℃

48V

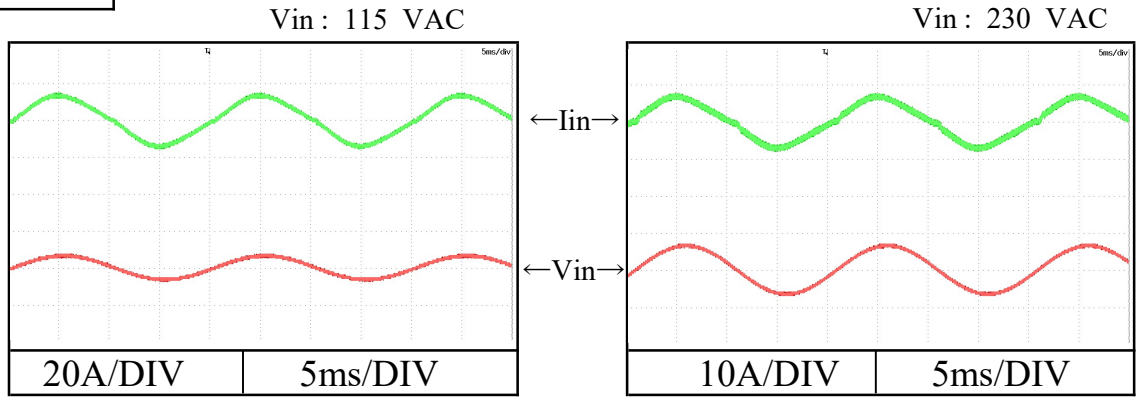




2.12 Input current waveform

Conditions Iout : Full load
Ta : 25 ℃

48V

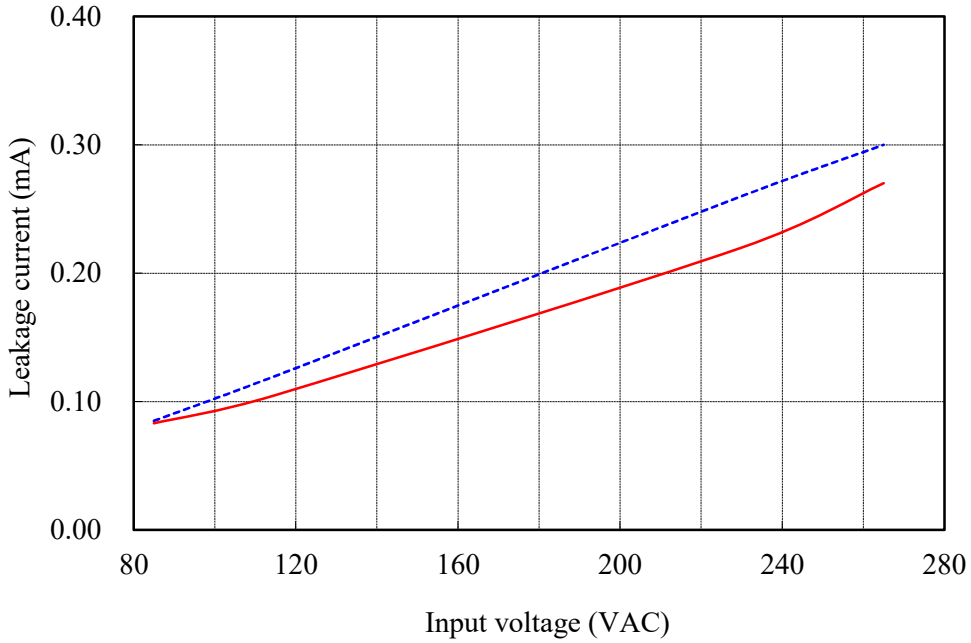


2.13 Leakage current characteristics

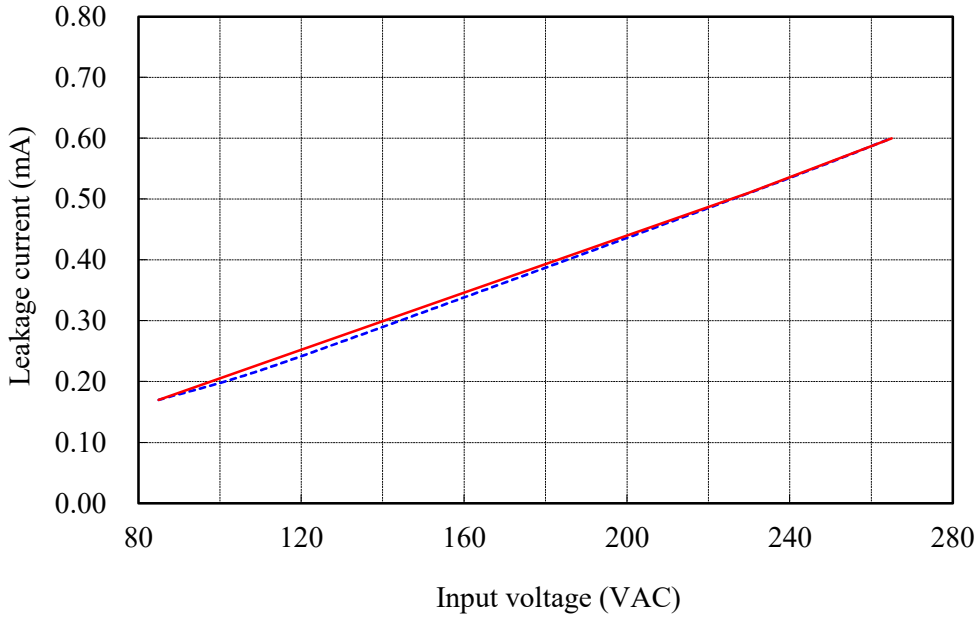
Conditions Iout : 0 %
Full Load
Ta : 25 ℃
f : 60 Hz

48V

Normal condition



Single fault condition (Open L or N)



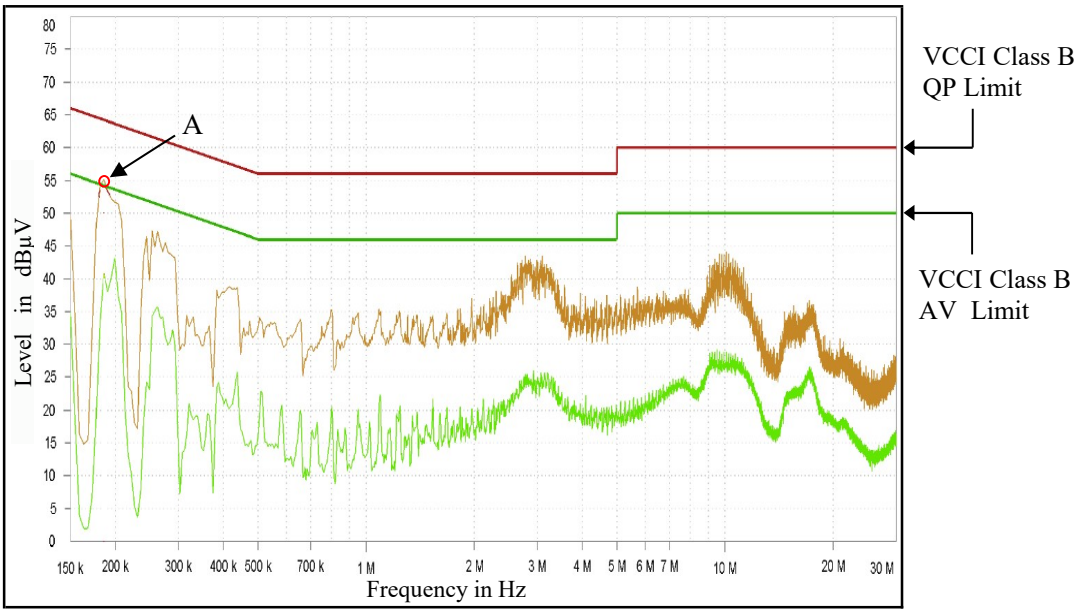
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
Iout : 66.7 A (100%)
Ta : 25 ℃

Conducted Emission

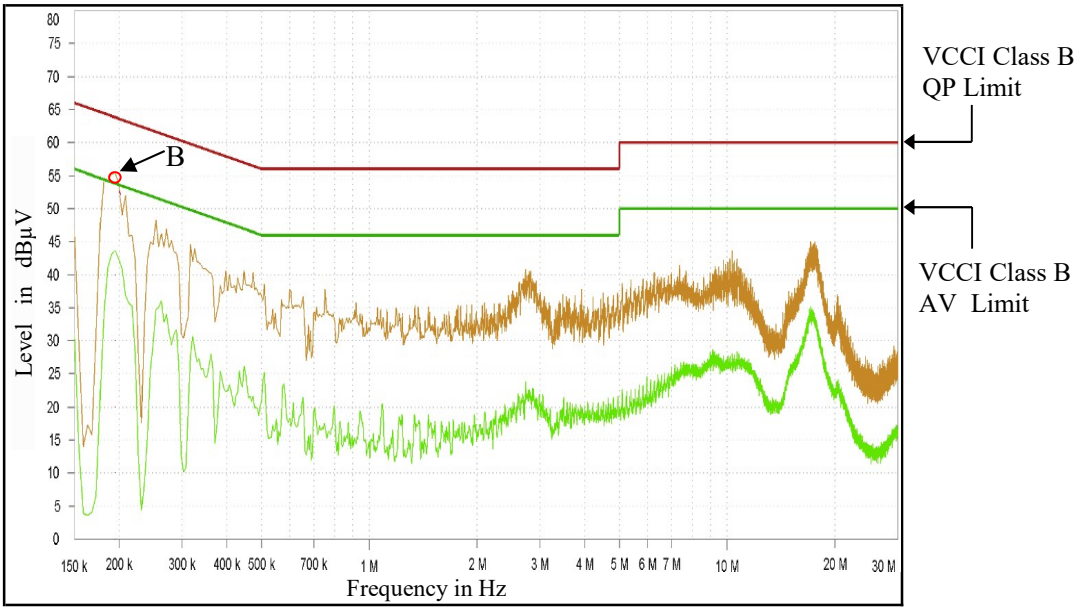
12V

Phase : N



Ref. Data	Point A (0.186MHz) Limit (dBuV)	Measure (dBuV)
QP	64.2	52.9
AV	54.2	43.2

Phase : L



Ref. Data	Point B (0.195MHz) Limit (dBuV)	Measure (dBuV)
QP	63.8	52.2
AV	53.8	43.0

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

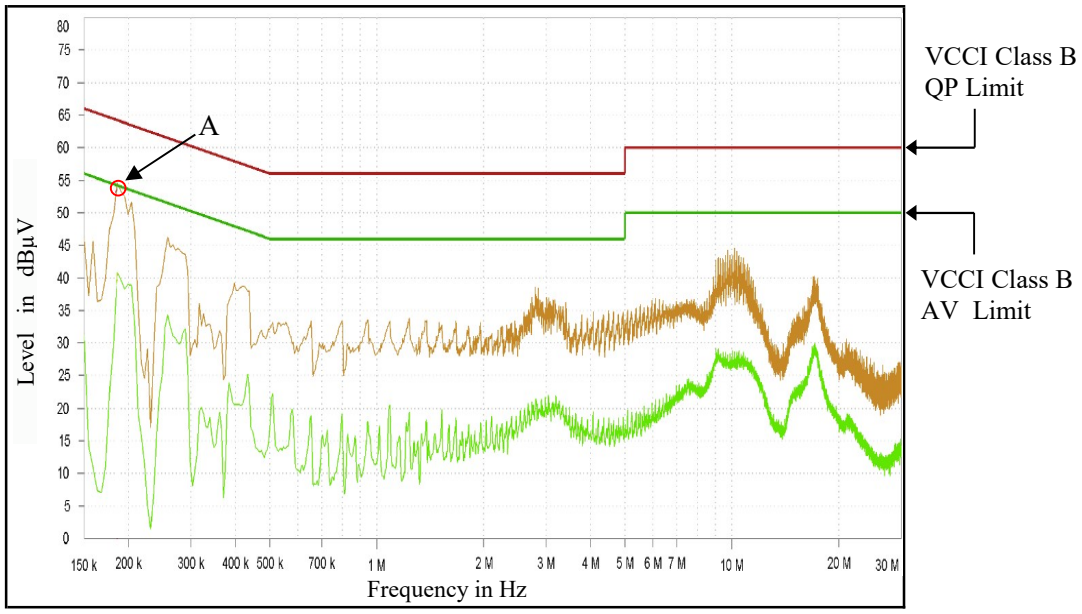
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : 66.7 A (100%)
Ta : 25 ℃

Conducted Emission

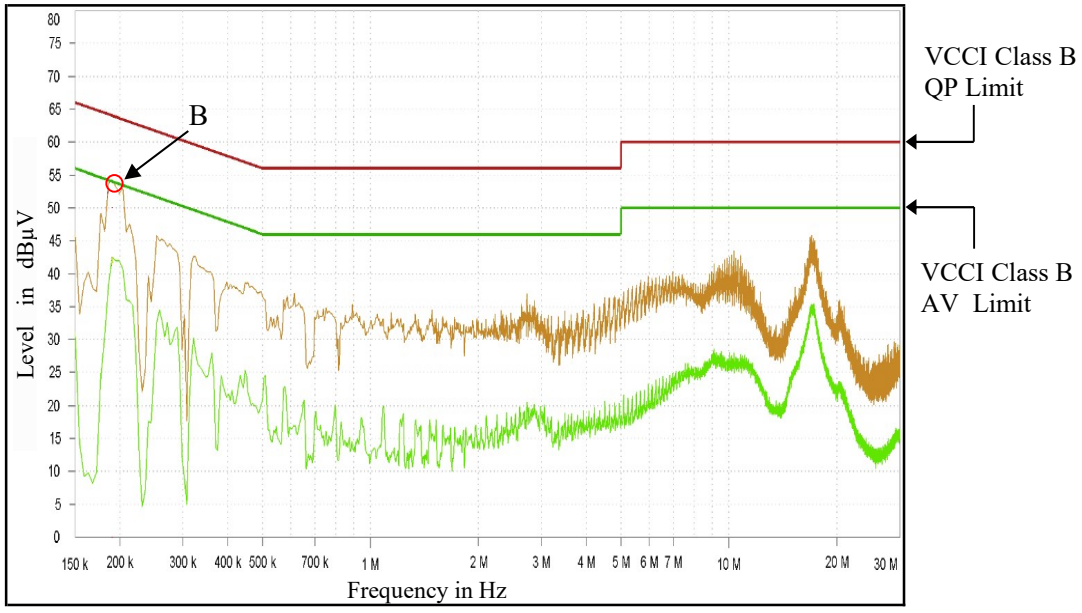
12V

Phase : N



Ref. Data	Point A (0.186MHz) Limit (dBuV)	Measure (dBuV)
QP	64.2	52.2
AV	54.2	40.8

Phase : L



Ref. Data	Point B (0.191MHz) Limit (dBuV)	Measure (dBuV)
QP	64.0	52.0
AV	54.0	42.1

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

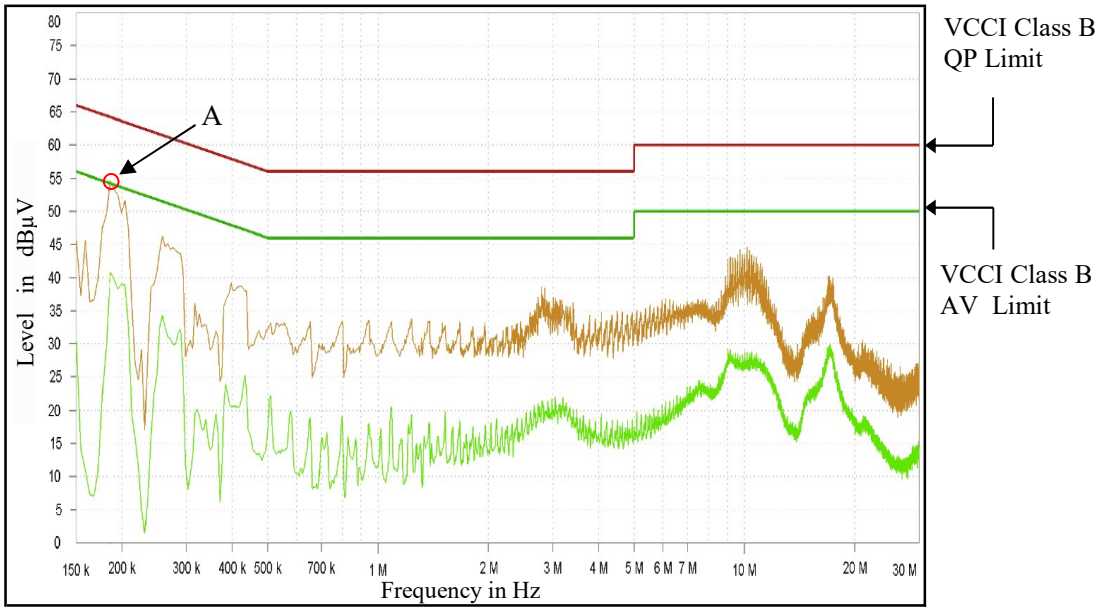
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
Iout : 41.7 A (100%)
Ta : 25 ℃

Conducted Emission

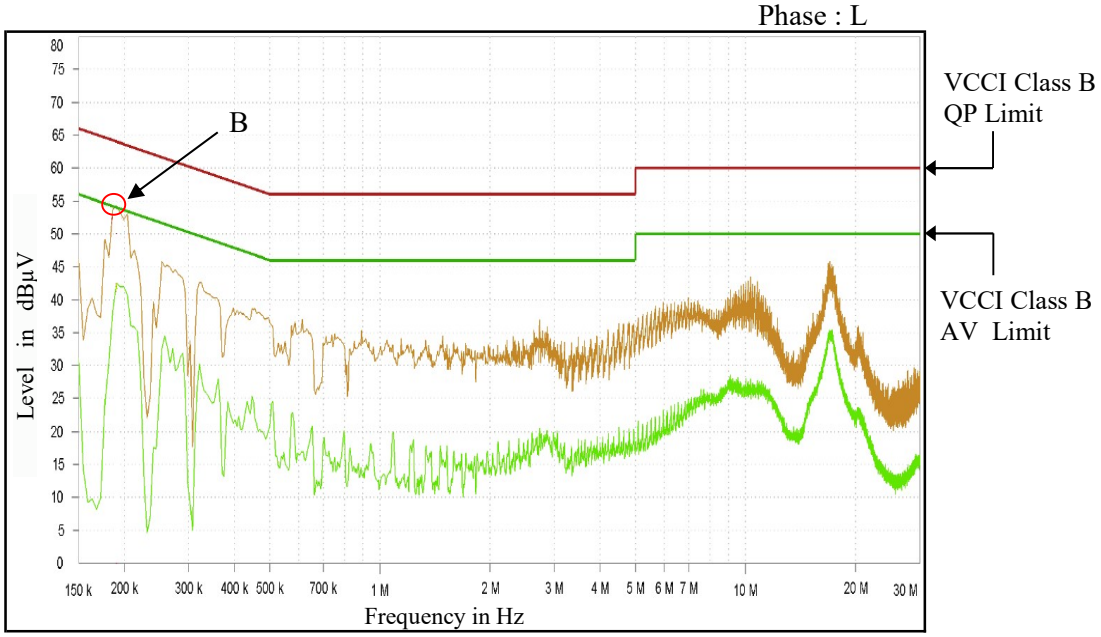
24V

Phase : N



Ref. Data	Point A (0.182MHz) Limit (dBuV)	Measure (dBuV)
QP	64.4	53.2
AV	54.4	40.6

Phase : L



Ref. Data	Point B (0.182MHz) 31 (dBuV)	Measure (dBuV)
QP	64.4	53.2
AV	54.4	41.6

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

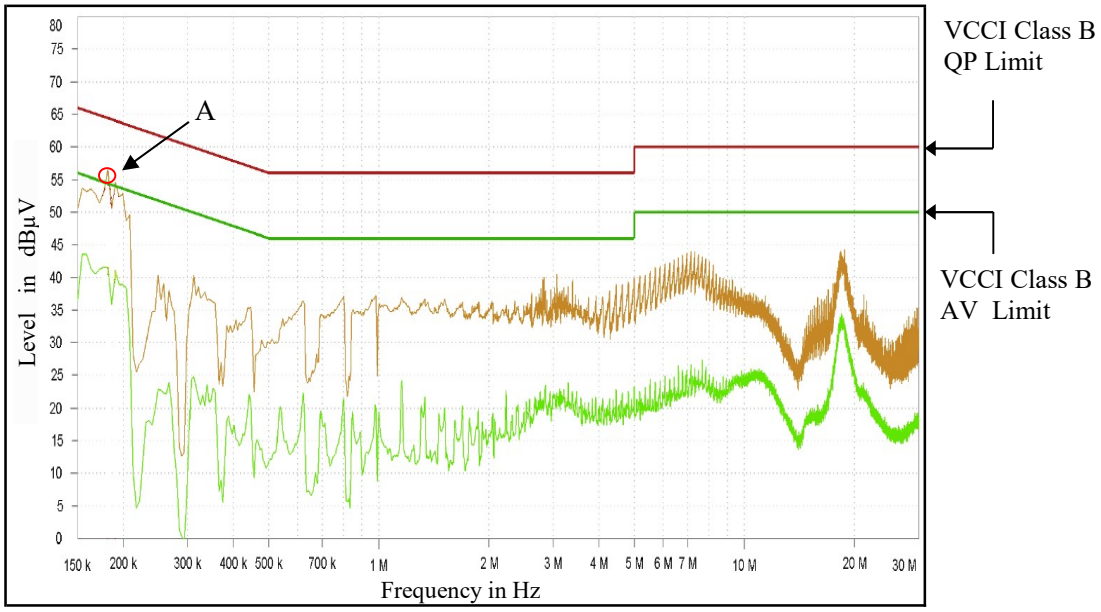
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : 41.7 A (100%)
Ta : 25 ℃

Conducted Emission

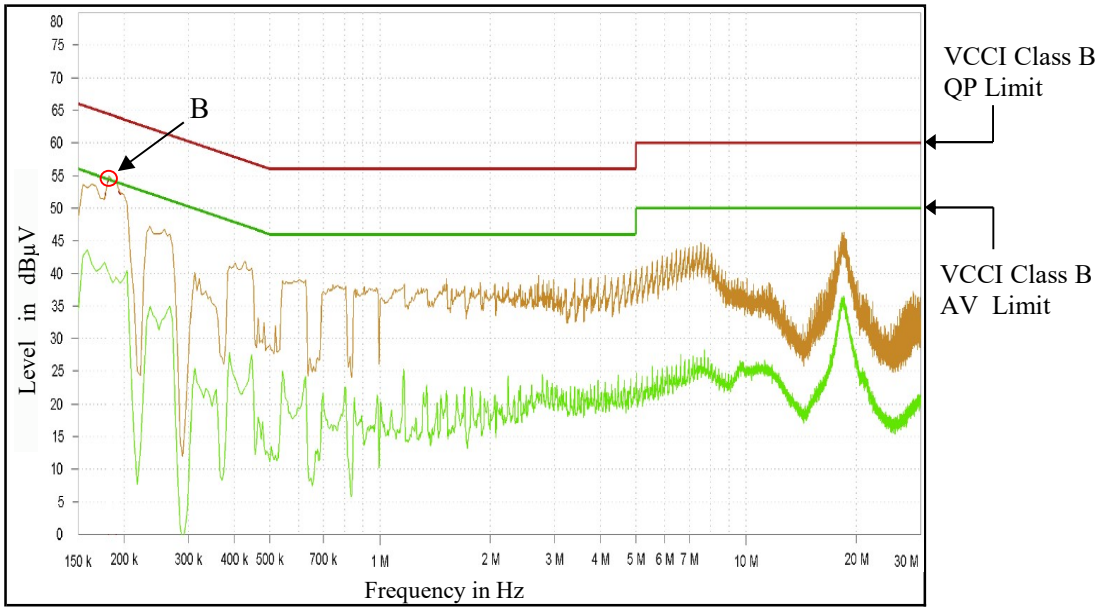
24V

Phase : N



Ref. Data	Point A (0.182MHz) Limit (dBuV)	Measure (dBuV)
QP	64.4	52.8
AV	54.4	40.5

Phase : L



Ref. Data	Point B (0.182MHz) Limit (dBuV)	Measure (dBuV)
QP	64.4	52.9
AV	54.4	40.7

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

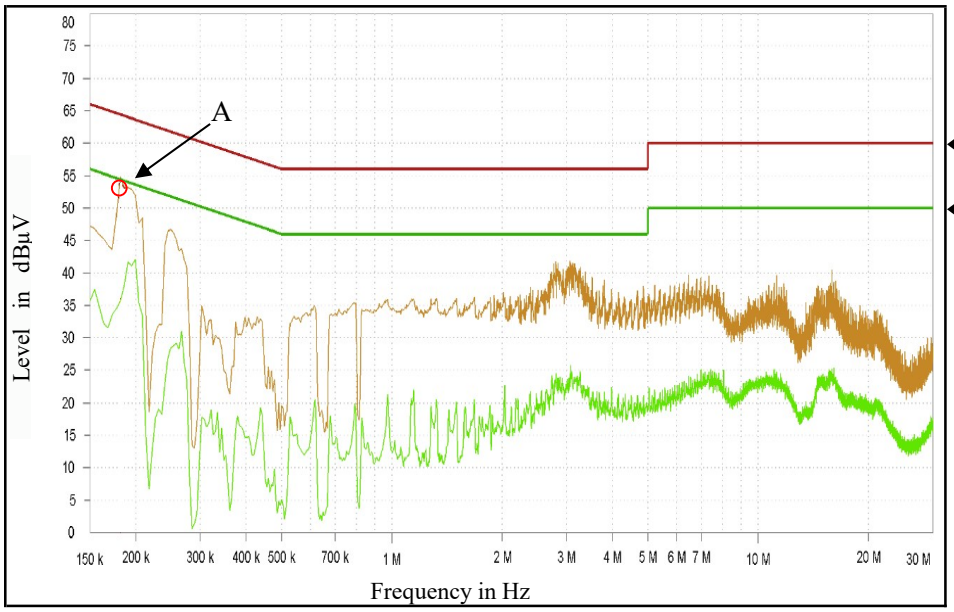
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
Iout : 27.8 A (100%)
Ta : 25 ℃

Conducted Emission

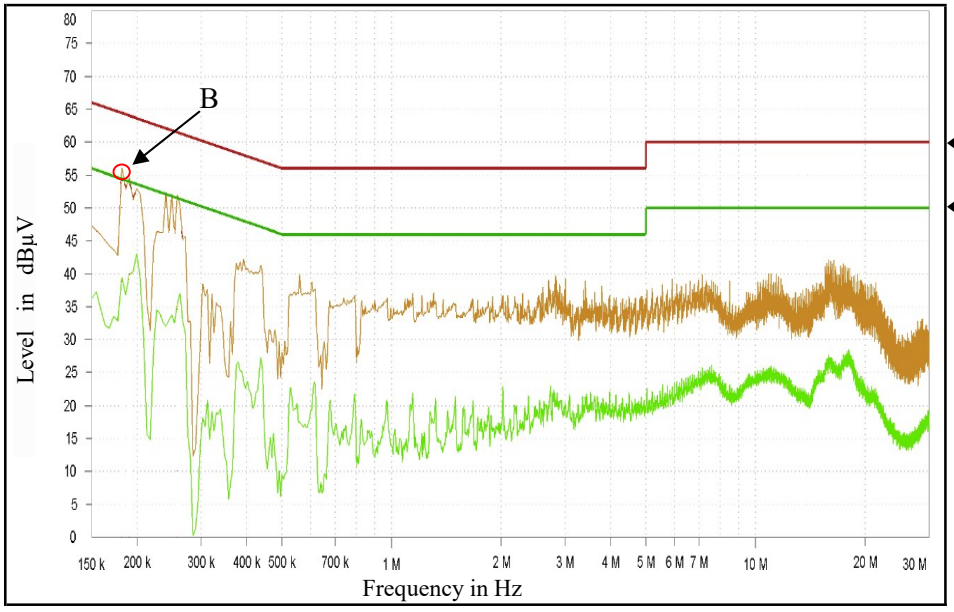
36V

Phase : N



Ref. Data	Point A (0.182Hz) Limit (dBuV)	Measure (dBuV)
QP	64.4	52.6
AV	54.4	42.3

Phase : L



Ref. Data	Point B (0.182MHz) Limit (dBuV)	Measure (dBuV)
QP	64.4	52.8
AV	54.4	43.2

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

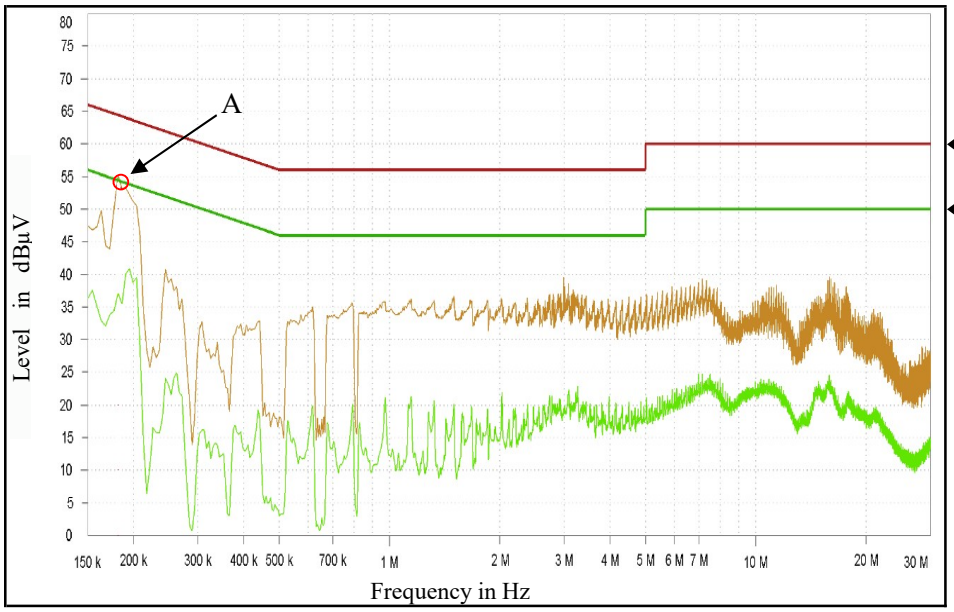
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : 27.8 A (100%)
Ta : 25 ℃

Conducted Emission

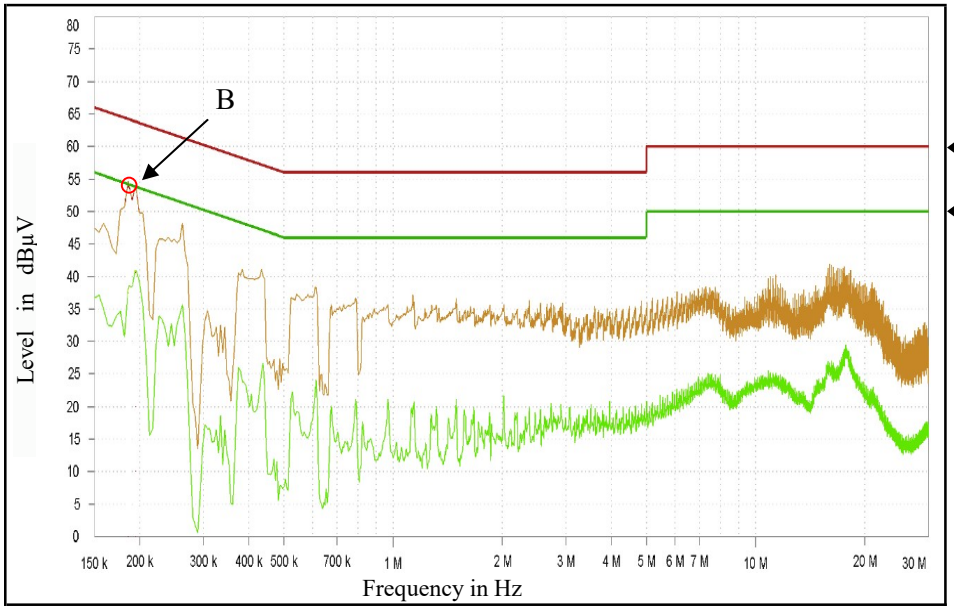
36V

Phase : N



Ref. Data	Point A (0.182Hz) Limit (dBuV)	Measure (dBuV)
QP	64.4	52.6
AV	54.4	40.3

Phase : L



Ref. Data	Point B (0.186MHz) Limit (dBuV)	Measure (dBuV)
QP	64.2	52.6
AV	54.2	40.5

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

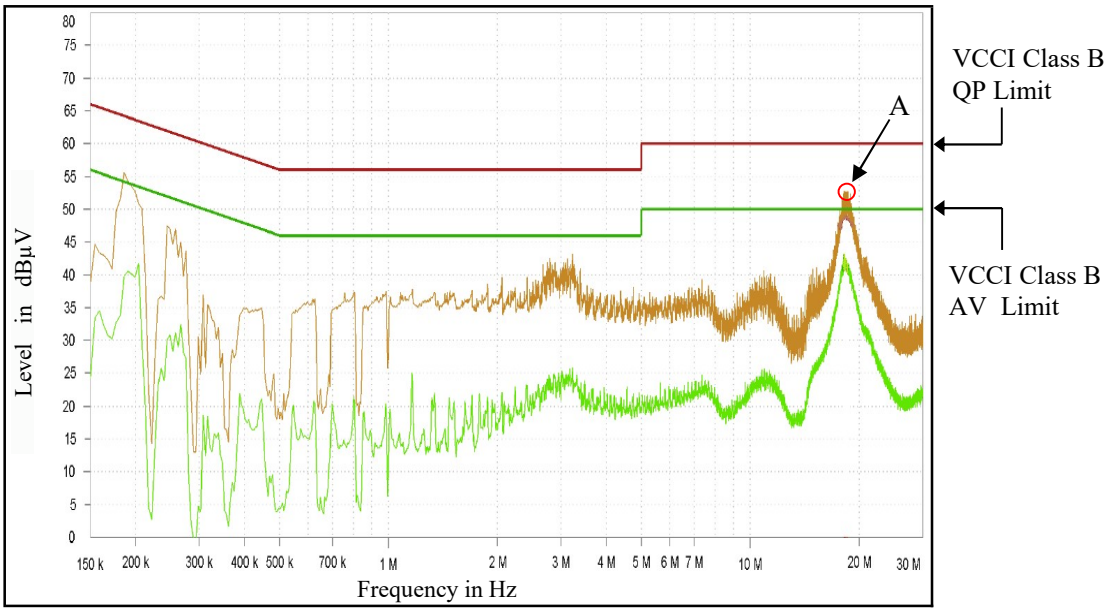
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
Iout : 20.9 A (100%)
Ta : 25 ℃

Conducted Emission

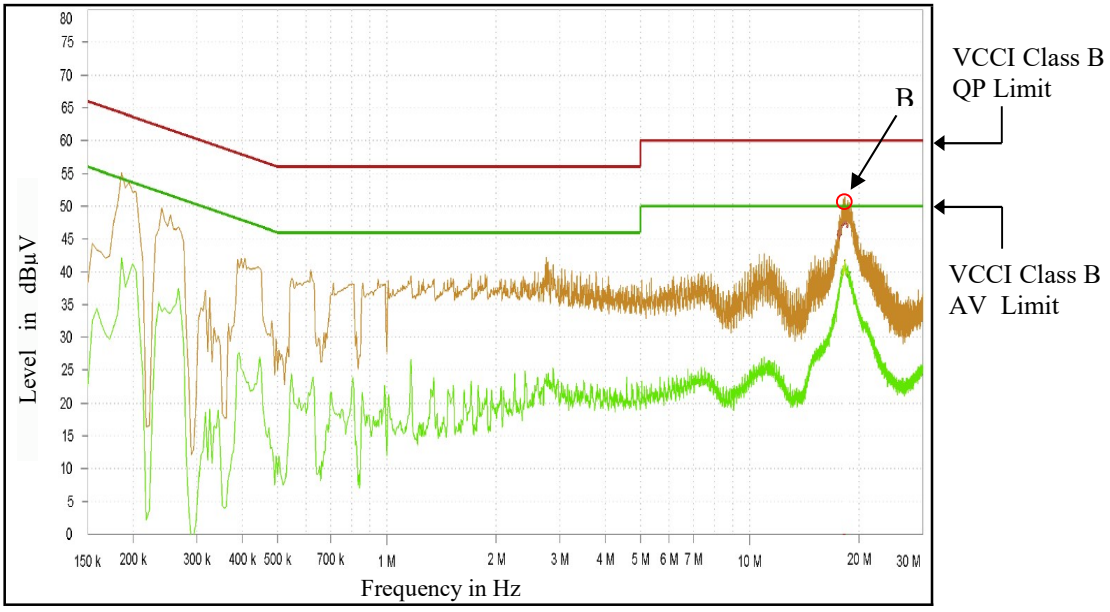
48V

Phase : N



Ref. Data	Point A (18.3MHz) Limit (dBuV)	Measure (dBuV)
QP	60.0	47.6
AV	50.0	41.9

Phase : L



Ref. Data	Point B (18.29MHz) Limit (dBuV)	Measure (dBuV)
QP	60.0	46.2
AV	50.0	40.5

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

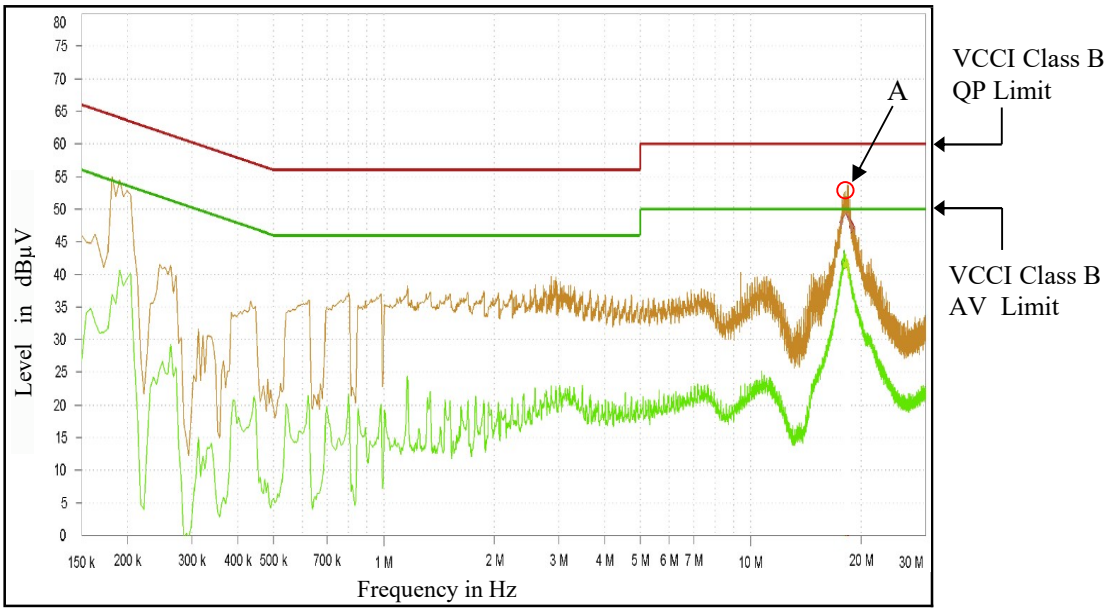
2.14 Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
Iout : 20.9 A (100%)
Ta : 25 ℃

Conducted Emission

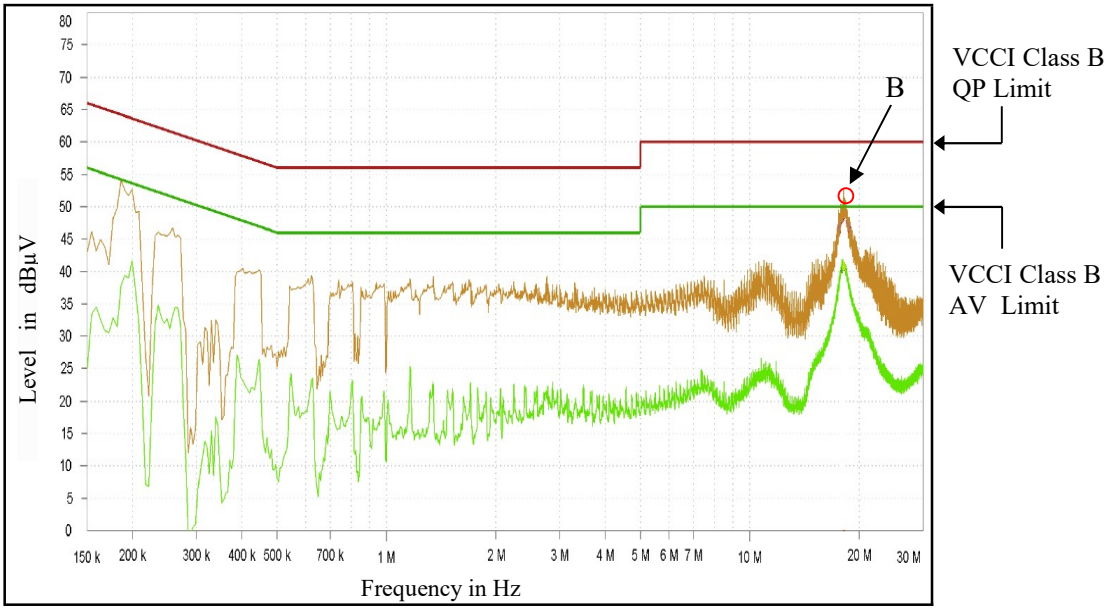
48V

Phase : N



Ref. Data	Point A (18.2MHz) Limit (dBuV)	Measure (dBuV)
QP	60.0	48.0
AV	50.0	42.4

Phase : L



Ref. Data	Point B (18.16MHz) Limit (dBuV)	Measure (dBuV)
QP	60.0	46.8
AV	50.0	41.4

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

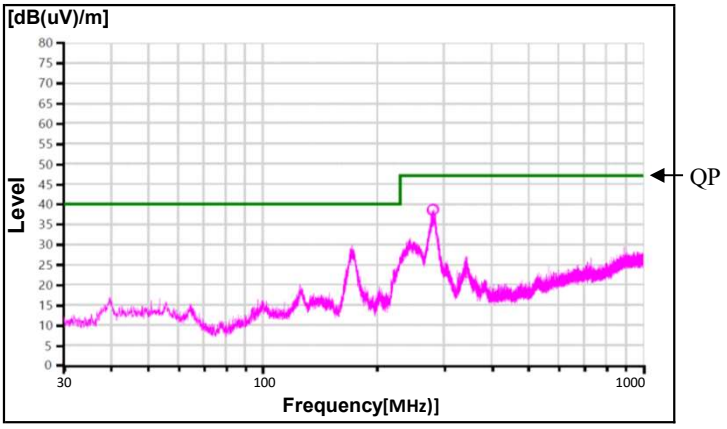
2.14 Electro-Magnetic Interference characteristics

Radiated Emission

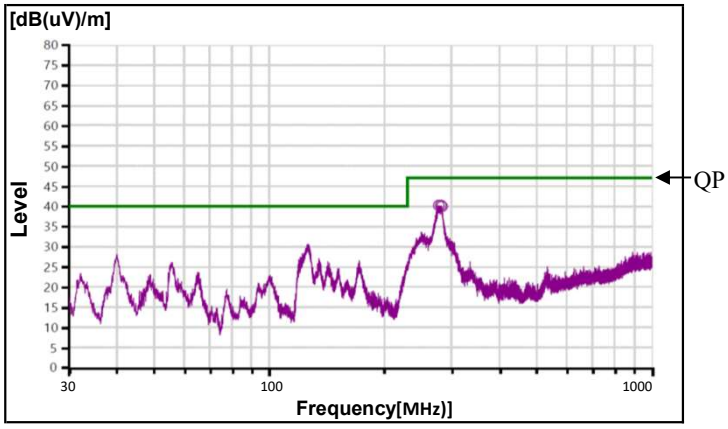
12V

Conditions Vin : 115 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL

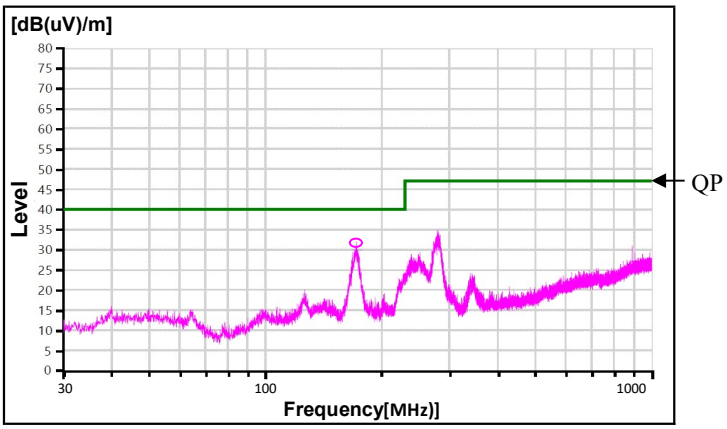


VERTICAL

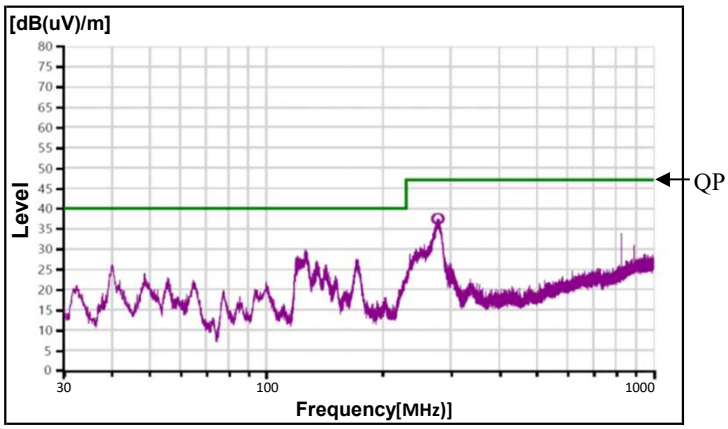


Conditions Vin : 230 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL



VERTICAL



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

Indication is peak values.

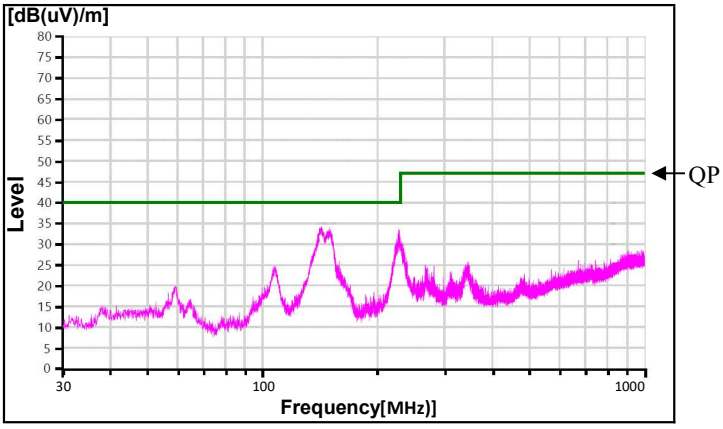
2.14 Electro-Magnetic Interference characteristics

Radiated Emission

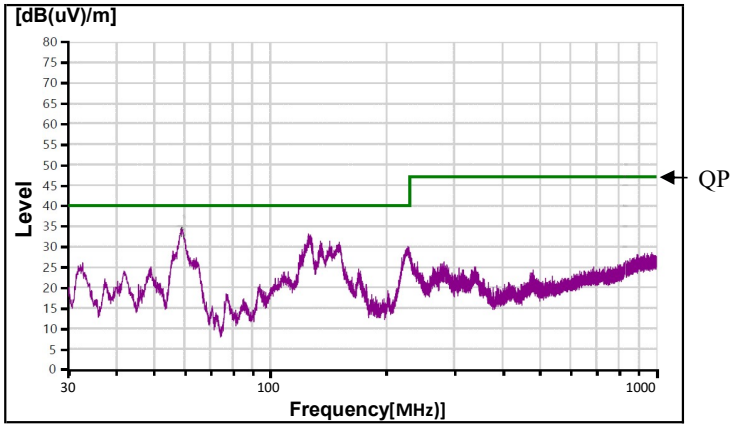
24V

Conditions Vin : 115 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL

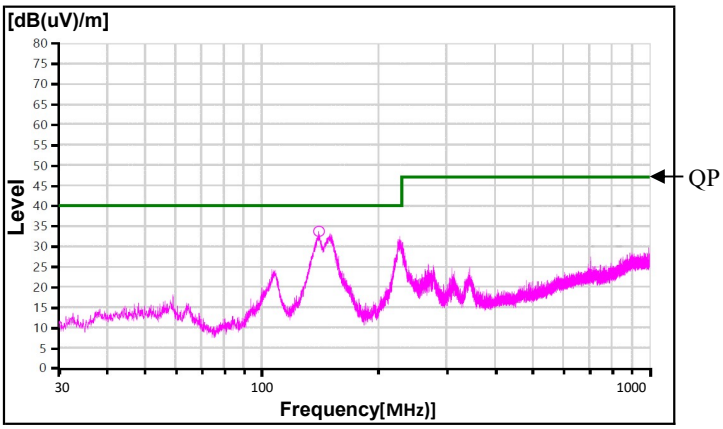


VERTICAL

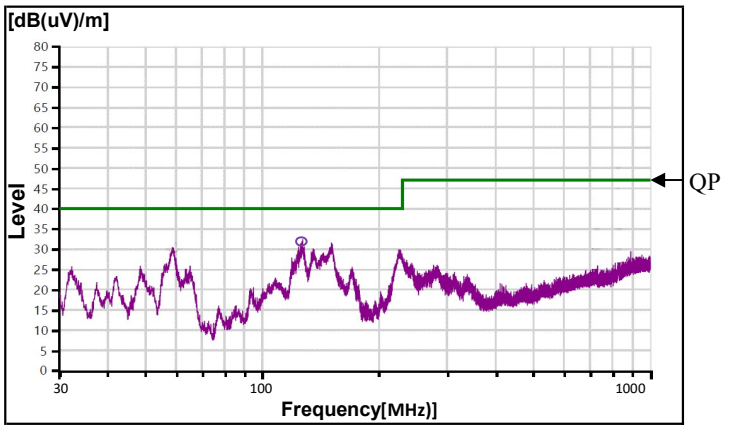


Conditions Vin : 230 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL



VERTICAL



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

Indication is peak values.

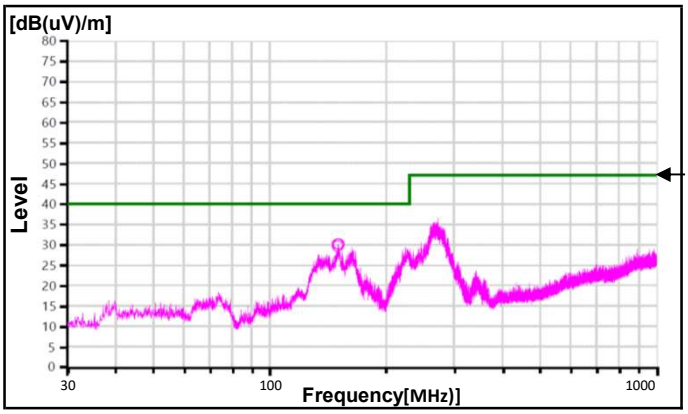
2.14 Electro-Magnetic Interference characteristics

Radiated Emission

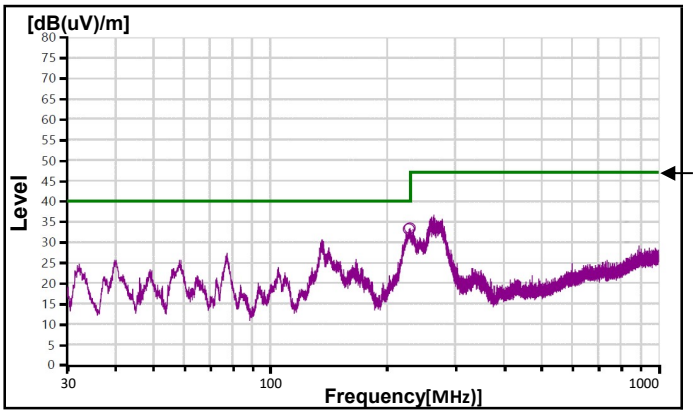
36V

Conditions Vin : 115 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL

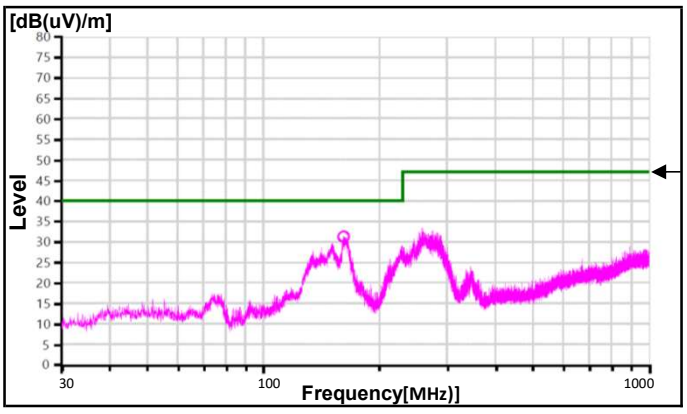


VERTICAL

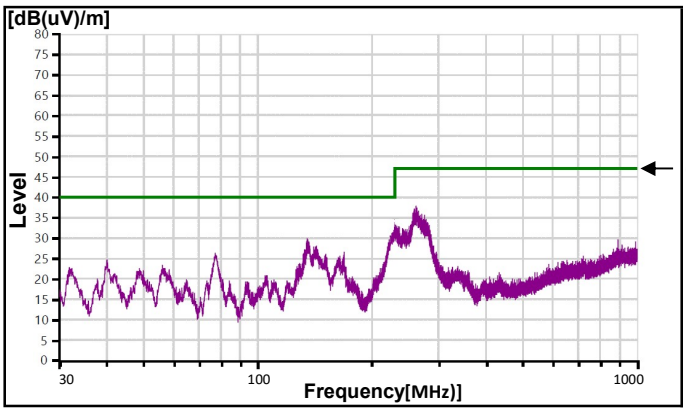


Conditions Vin : 230 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL



VERTICAL



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

Indication is peak values.

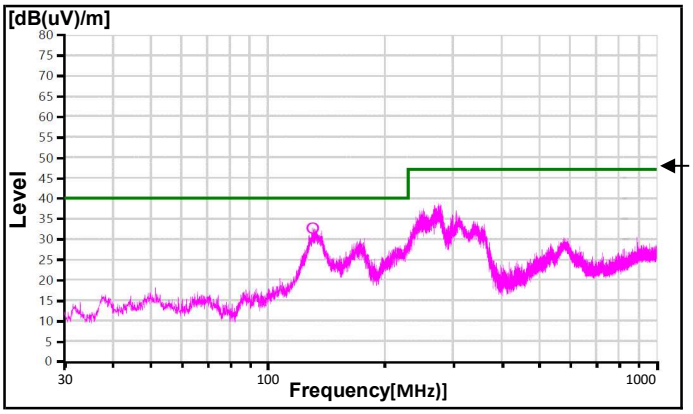
2.14 Electro-Magnetic Interference characteristics

Radiated Emission

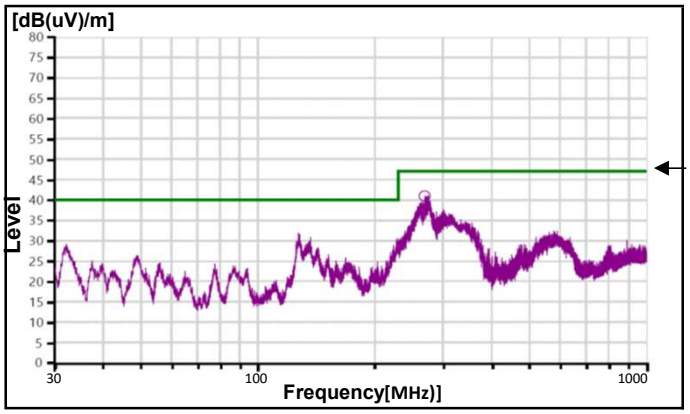
48V

Conditions Vin : 115 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL

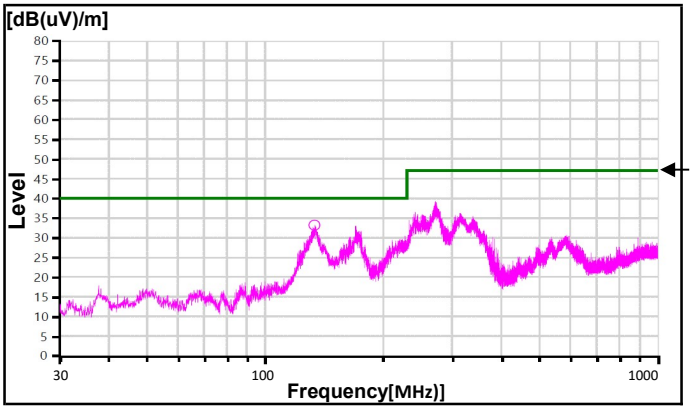


VERTICAL

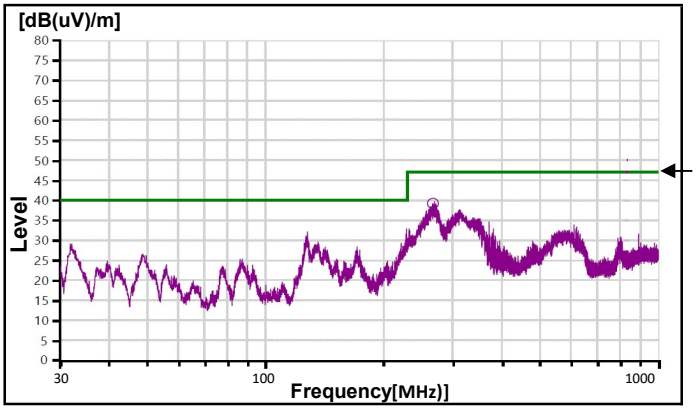


Conditions Vin : 230 VAC
Io : 100 %
Ta : 25 ℃

HORIZONTAL



VERTICAL



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

Indication is peak values.

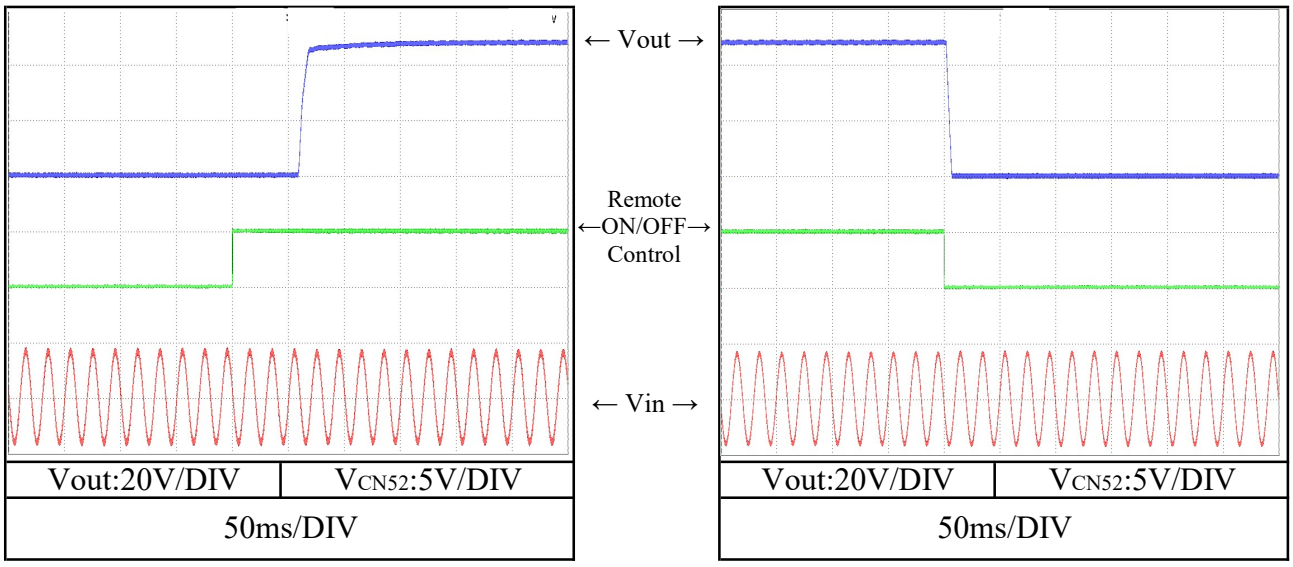
2.15 Remote ON/OFF control

(Remote on/off function is with GUS1000/R model ,stantard model doesn't have remote on/off function.)

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

Output rise, fall characteristics with Remote ON/OFF Control

48V



2.16 Audible noise of fan

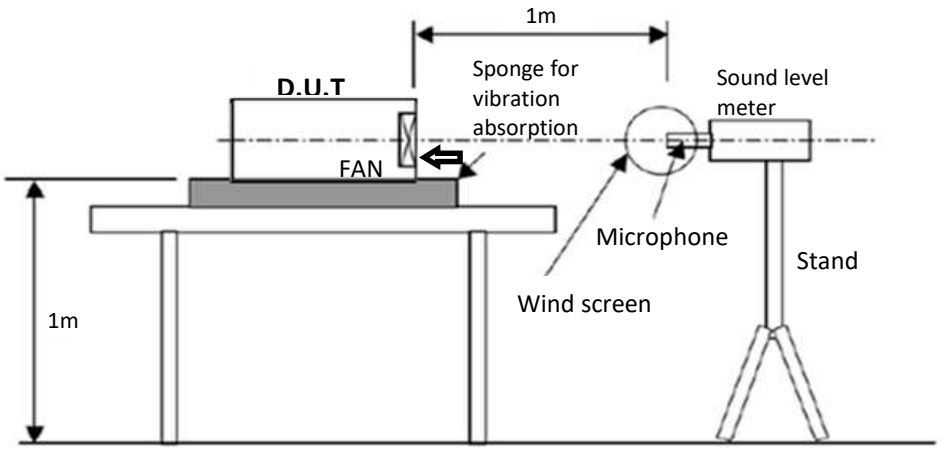
48V

Test condition: Background noise: 13 [dB(A)]
Test duration: 60 [s]
Vin: 100VAC
Iout: 100%
Ta: 25℃

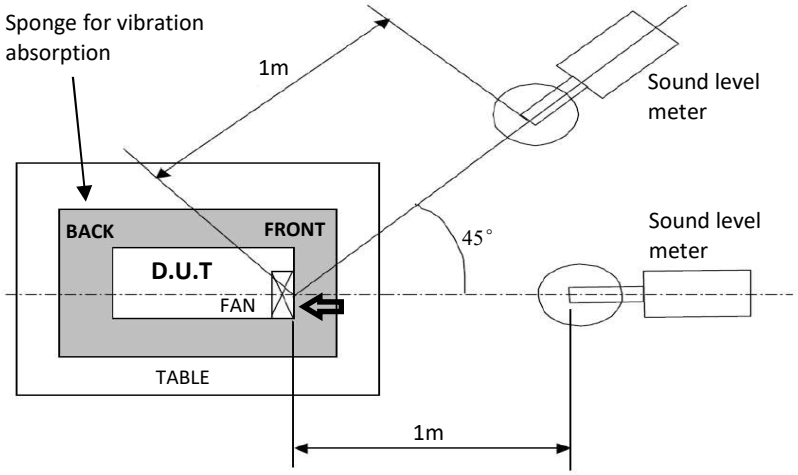
Test equipment：

Sound Calibrator: Type 4231 (B&K) Audio Analyzer: Type 3560-C (B&K)

Test Method：



Basic setting of sound measurements



Position of a sound meter intake surface (air inlet)

Test Results:

Position	Noise
0°	44.5dB
45°	44.8dB