

CUS1000M

EVALUATION DATA

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Terminology used

	Definition
Vin Input voltage
Vout Output voltage
Iin Input current
Iout Output current
Ta Ambient temperature
f Frequency
PG Power good signal
Vstb Output voltage of standby
Istb Output current of standby

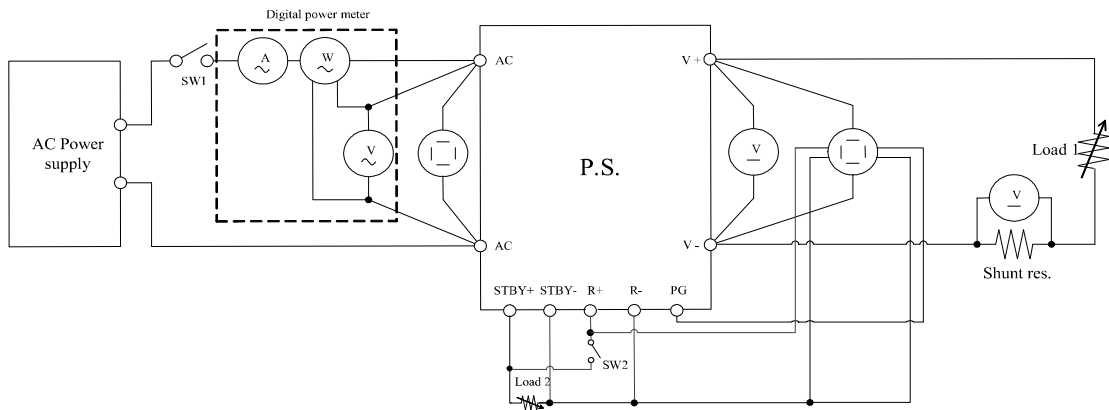
※ Test results are reference data based on our measurement condition.

1. Evaluation Method

1-1. Circuit used for determination

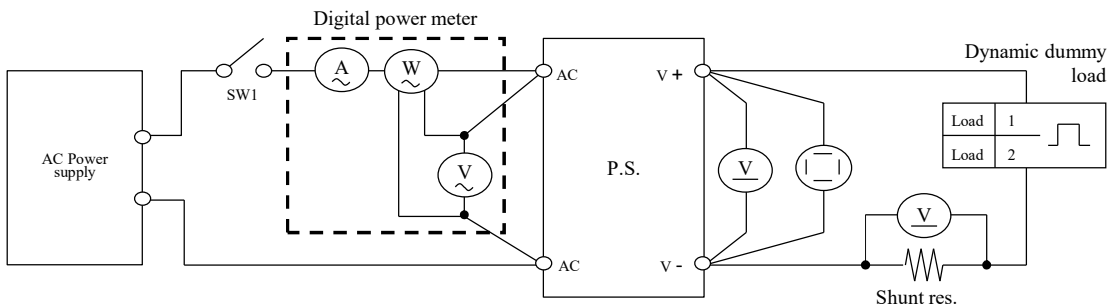
Circuit 1 used for determination

- 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
- Various signal

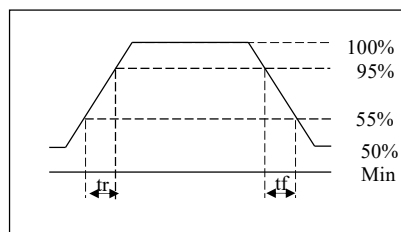


Circuit 2 used for determination

- Dynamic load response characteristics

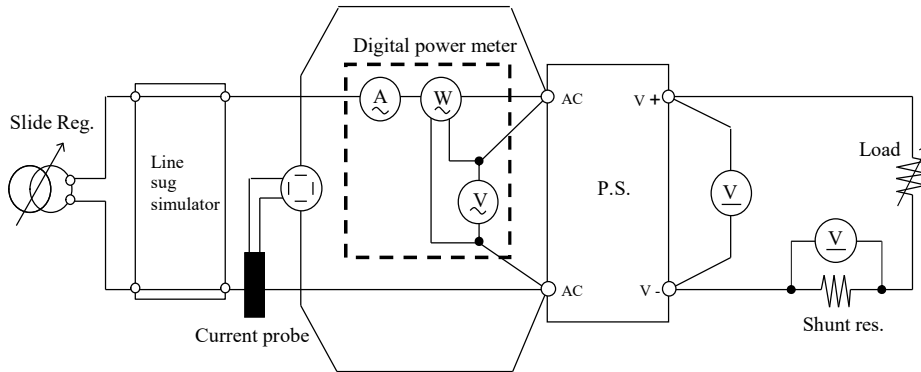


Output current waveform
I_{out} 50% <=> 100%



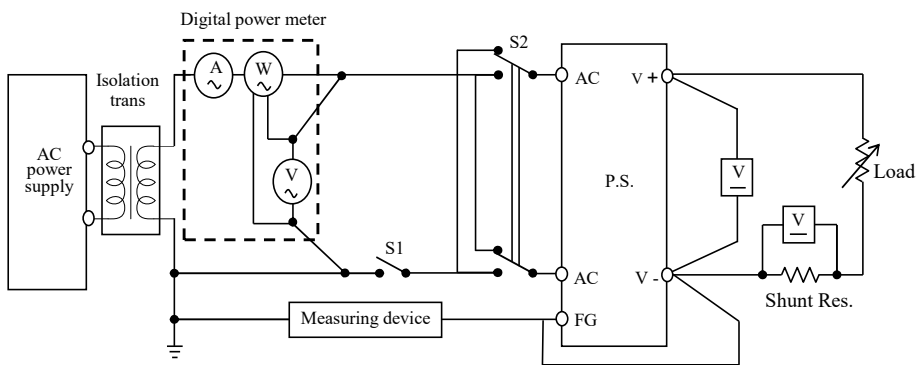
Circuit 3 used for determination

- Inrush current waveform



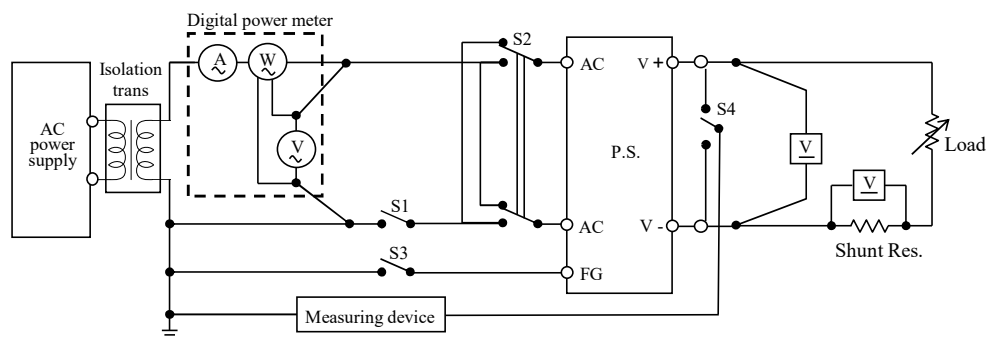
Circuit 4 used for determination

- Earth leakage current characteristics



Measure in all possible combination of position of S2 with :
S1 closed (normal condition), and S1 open (single fault condition)

- Patient leakage current



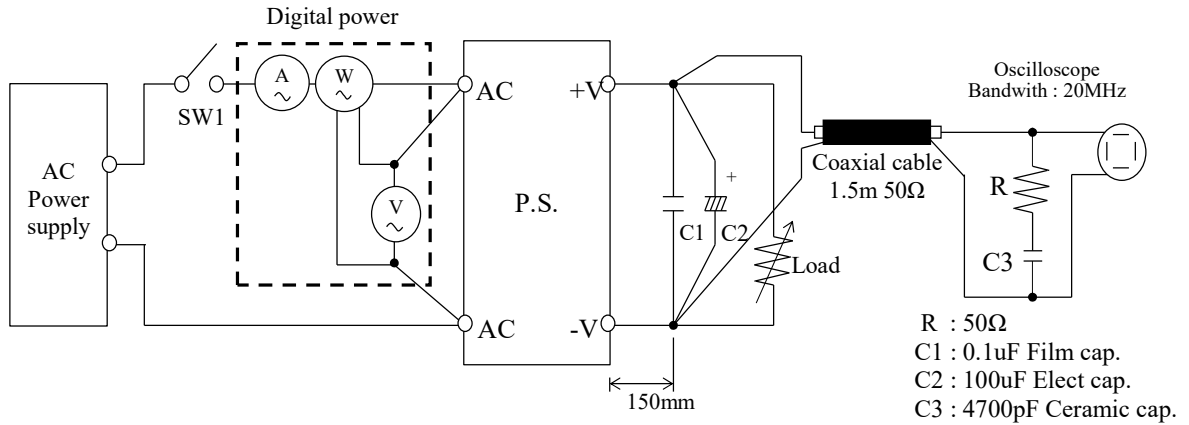
CLASS I equipment:

S1, S3 closed, measure under all possible position of S2 & S4.

Single fault condition: S1 open with S3 close or S1 close with S3 open.

Circuit 5 used for determination

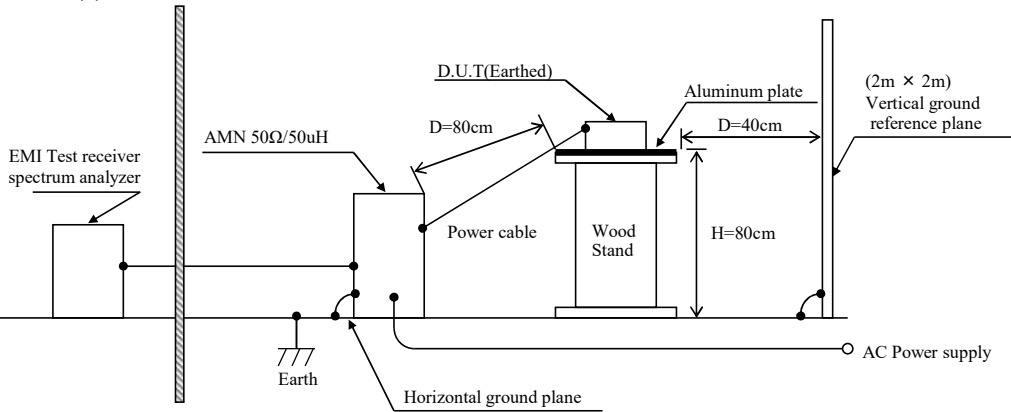
- Output ripple and noise waveform



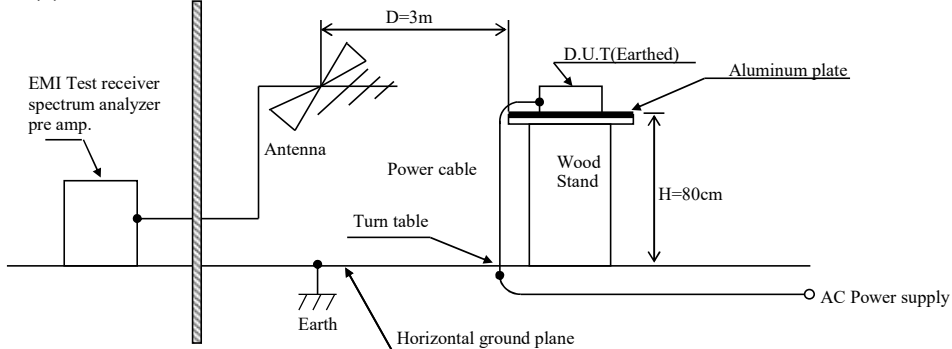
Configuration used for determination

- Electro-Magnetic Interference characteristics

(a) Conducted Emission



(b) Radiated Emission



1-2. List of equipment used

	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	PATIENT LEAKAGE CURRENT METER	SIQ	SIQ16042
10	CONTROLLED TEMP. CHAMBER	TABAI-ESPEC	SH-662
11	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESR3
12	LISN	ROHDE & SCHWARZ	ENV216
13	BROADBAND ANTENNA	SCHWARZBECK	VULB9163
14	LINE SUG SIMULATOR	TAKAMISAWA	PSA-210
15	SOUND CALIBRATOR	BRUEL AND KJAER	TYPE 4231
16	AUDIO ANALYZER	BRUEL AND KJAER	TYPE 3560-C

1-3. Load conditions

V _{in}	I _{out}	12V	24V	36V	48V
85 - 265VAC	50%	33.35A	20.85A	13.9A	10.45A
85VAC	90%	60.03A	37.53A	25.02A	18.81A
90 - 265VAC	100%	66.7A	41.7A	27.8A	20.9A
85 - 265VAC	50%Peak	41.7A	20.85A	13.9A	10.45A
85 - 265VAC	Peak	83.4A	41.7A	27.8A	20.9A

*V_{stb}=5V, I_{stb}=2A(100%)

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 °C
Iout : 100 % (66.7A)
Istb : 0 %

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	Line regulation	
0%	12.034V	12.033V	12.033V	12.032V	2mV	0.017%
50%	12.018V	12.015V	12.016V	12.015V	3mV	0.025%
100%	-	12.003V	12.001V	12.001V	2mV	0.017%
Peak	-	11.998V	11.997V	11.998V	1mV	0.008%
Load regulation	16mV	35mV	36mV	34mV		
	0.133%	0.292%	0.300%	0.283%		

2. Temperature drift

Condition Vin : 115 VAC
Iout : 100 % (66.7A)
Istb : 0 %

Ta	-20°C	+25°C	+40°C	Temperature stability	
Vout	11.986V	11.995V	11.999V	13mV	0.108%

3. Start up voltage and Drop out voltage

Condition Ta : 25 °C
Iout : Peak (83.4A)
Istb : 0 %

Start up voltage (Vin)	79.2VAC
Drop out voltage (Vin)	77.8VAC

24V

1. Regulation - line and load

Condition Ta : 25 °C
Iout : 100 % (41.7A)
Istb : 0 %

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	Line regulation	
0%	23.996V	23.995V	23.995V	23.995V	1mV	0.004%
50%	23.978V	23.978V	23.979V	23.976V	3mV	0.013%
100%	-	23.961V	23.964V	23.959V	5mV	0.021%
Load regulation	18mV	34mV	31mV	36mV		
	0.075%	0.142%	0.129%	0.150%		

2. Temperature drift

Condition Vin : 115 VAC
Iout : 100 % (41.7A)
Istb : 0 %

Ta	-20°C	+25°C	+40°C	Temperature stability	
Vout	23.964V	23.965V	23.965V	1mV	0.004%

3. Start up voltage and Drop out voltage

Condition Ta : 25 °C
Iout : 100 % (41.7A)
Istb : 0 %

Start up voltage (Vin)	79.2VAC
Drop out voltage (Vin)	77.8VAC

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

36V

1. Regulation - line and load

Condition Ta : 25 °C
Iout : 100 % (27.8A)
Istb : 0 %

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	Line regulation	
0%	36.019V	36.018V	36.021V	36.022V	4mV	0.011%
50%	36.004V	36.002V	36.005V	36.004V	3mV	0.008%
100%	-	35.992V	35.995V	35.995V	3mV	0.008%
Load regulation	15mV	26mV	26mV	27mV		
	0.042%	0.072%	0.072%	0.075%		

2. Temperature drift

Condition Vin : 115 VAC
Iout : 100 % (27.8A)
Istb : 0 %

Ta	-20°C	+25°C	+40°C	Temperature stability	
Vout	35.957V	35.983V	35.983V	26mV	0.072%

3. Start up voltage and Drop out voltage

Condition Ta : 25 °C
Iout : 100 % (27.8A)
Istb : 0 %

Start up voltage (Vin)	79.2VAC
Drop out voltage (Vin)	77.8VAC

48V

1. Regulation - line and load

Condition Ta : 25 °C
Iout : 100 % (20.9A)
Istb : 0 %

Iout \ Vin	85VAC	115VAC	230VAC	265VAC	Line regulation	
0%	48.050V	48.055V	48.050V	48.050V	5mV	0.010%
50%	48.026V	48.034V	48.023V	48.024V	11mV	0.023%
100%	-	48.028V	48.015V	48.016V	13mV	0.027%
Load regulation	24mV	27mV	35mV	34mV		
	0.050%	0.056%	0.073%	0.071%		

2. Temperature drift

Condition Vin : 115 VAC
Iout : 100 % (20.9A)
Istb : 0 %

Ta	-20°C	+25°C	+40°C	Temperature stability	
Vout	47.975V	48.019V	48.023V	48mV	0.100%

3. Start up voltage and Drop out voltage

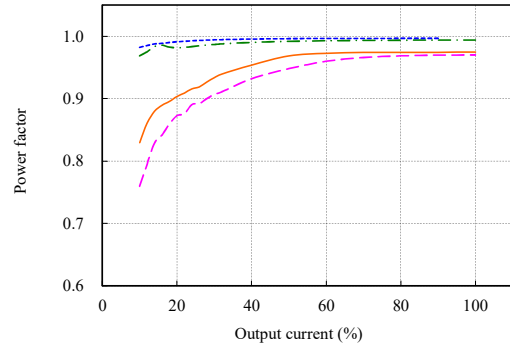
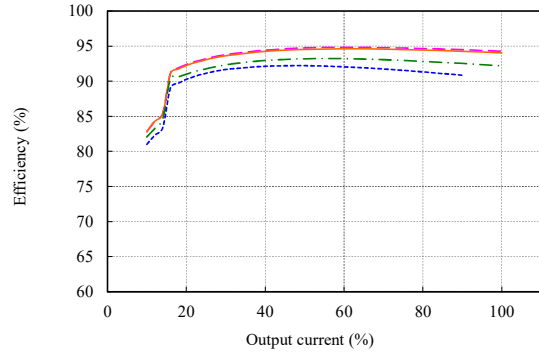
Condition Ta : 25 °C
Iout : 100 % (20.9A)
Istb : 0 %

Start up voltage (Vin)	79.2VAC
Drop out voltage (Vin)	77.8VAC

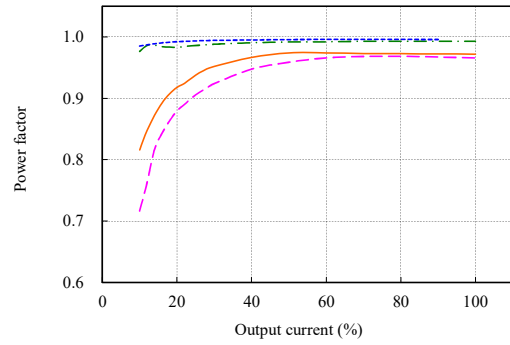
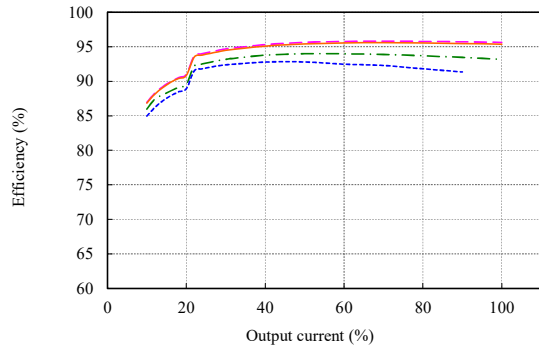
(2) Efficiency and Power factor vs. Output current

Conditions Vin : 85 VAC ---
 115 VAC - - -
 230 VAC ---
 265 VAC - - -
 Ta : 25 °C
 Istb : 0 %

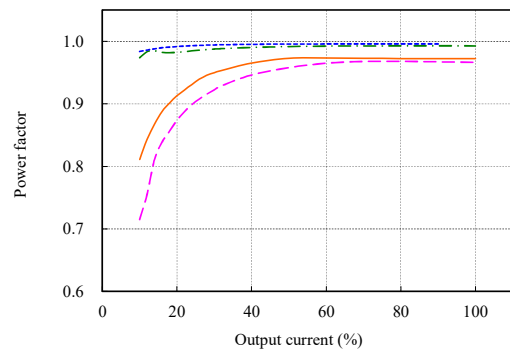
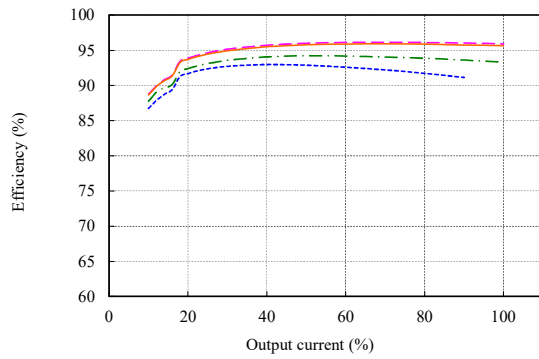
12V



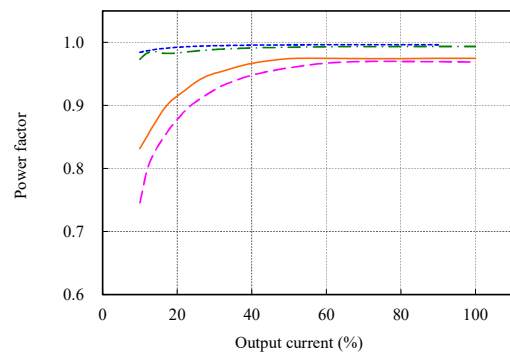
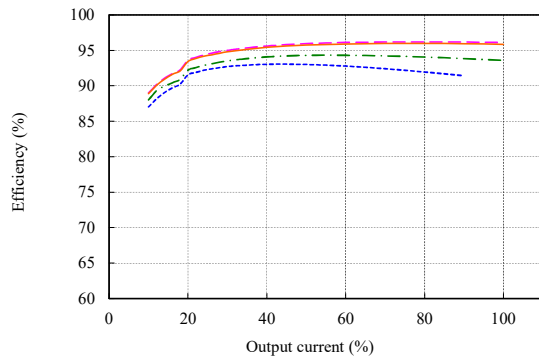
24V



36V



48V

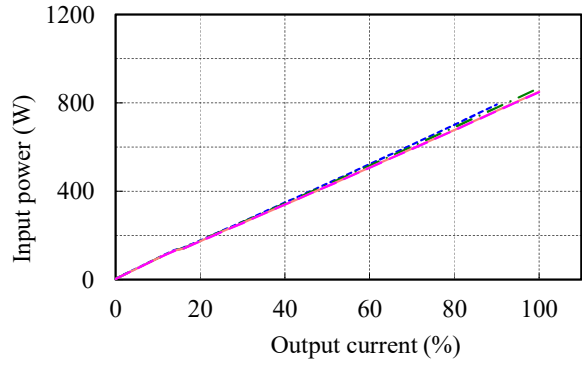


(3) Input power vs. Output current

Conditions Vin : 85 VAC ---
 115 VAC - - -
 230 VAC ---
 265 VAC - - -
 Ta : 25 °C
 Istb : 0 %

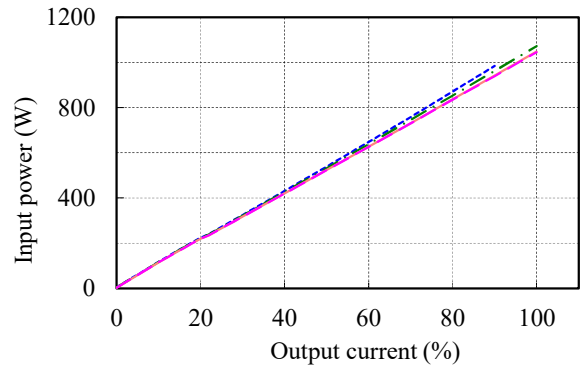
12V

Vin	Input power	
	Iout : 0%	Remote OFF
85VAC	4.2W	0.30W
115VAC	3.8W	0.34W
230VAC	2.9W	0.60W
265VAC	2.8W	0.71W



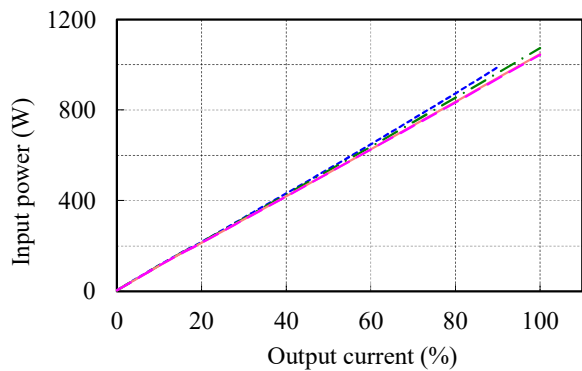
24V

Vin	Input power	
	Iout : 0%	Remote OFF
85VAC	4.3W	0.30W
115VAC	4.1W	0.34W
230VAC	3.1W	0.60W
265VAC	3.1W	0.71W



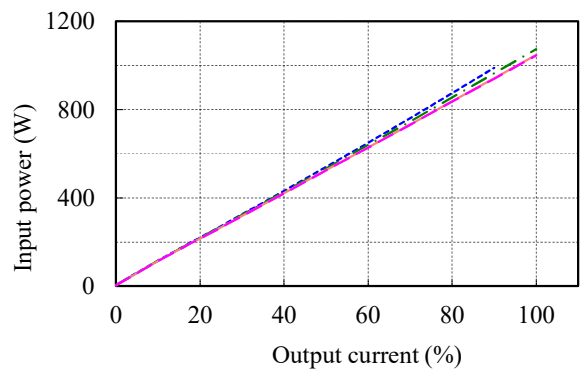
36V

Vin	Input power	
	Iout : 0%	Remote OFF
85VAC	4.5W	0.30W
115VAC	4.1W	0.34W
230VAC	3.4W	0.60W
265VAC	3.9W	0.71W



48V

Vin	Input power	
	Iout : 0%	Remote OFF
85VAC	4.6W	0.30W
115VAC	4.2W	0.34W
230VAC	3.4W	0.60W
265VAC	3.4W	0.71W

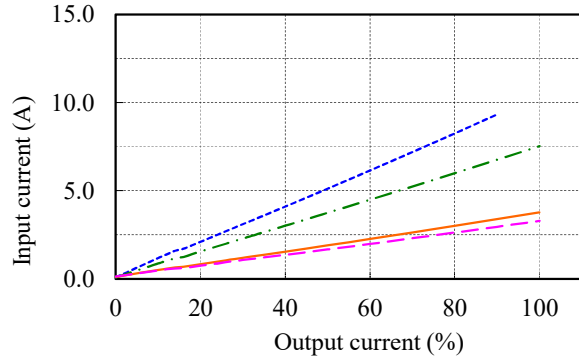


(4) Input current vs. Output current

Conditions Vin : 85 VAC ---
 115 VAC - - -
 230 VAC ———
 265 VAC - · - ·
 Ta : 25 °C
 Istb : 0 %

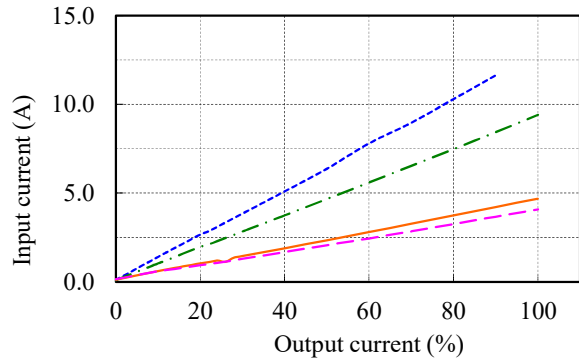
12V

Vin	Input current	
	Iout : 0%	Remote OFF
85VAC	0.09A	0.05A
115VAC	0.09A	0.07A
230VAC	0.12A	0.10A
265VAC	0.14A	0.12A



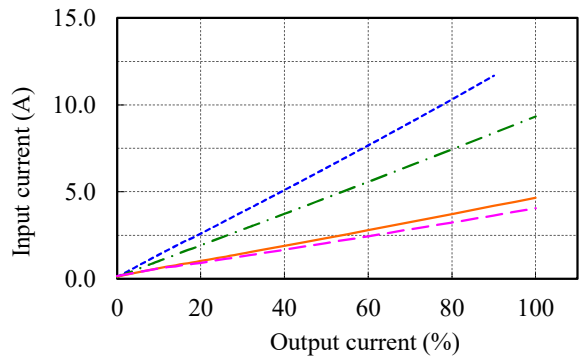
24V

Vin	Input current	
	Iout : 0%	Remote OFF
85VAC	0.10A	0.05A
115VAC	0.09A	0.07A
230VAC	0.12A	0.10A
265VAC	0.15A	0.12A



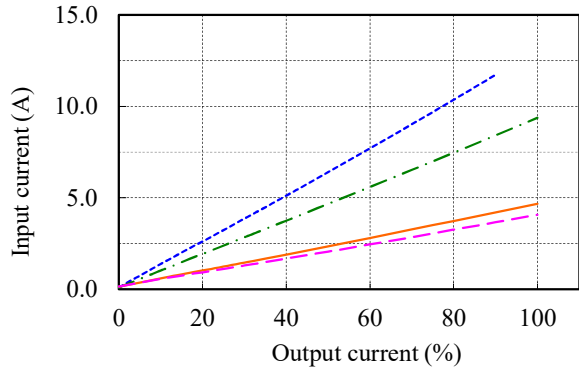
36V

Vin	Input current	
	Iout : 0%	Remote OFF
85VAC	0.10A	0.05A
115VAC	0.09A	0.07A
230VAC	0.12A	0.10A
265VAC	0.15A	0.12A



48V

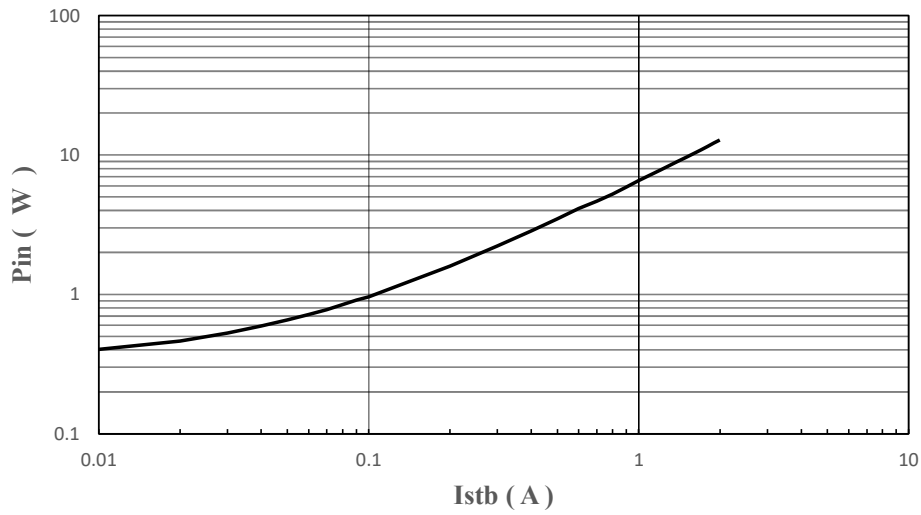
Vin	Input current	
	Iout : 0%	Remote OFF
85VAC	0.10A	0.05A
115VAC	0.09A	0.07A
230VAC	0.13A	0.10A
265VAC	0.15A	0.12A



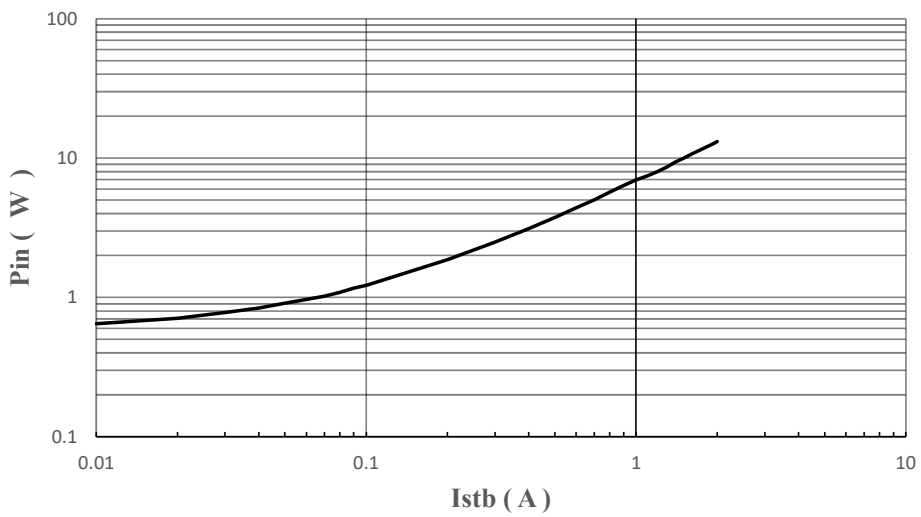
(5) Input power vs. Output current @ Remote OFF

Condition Remote OFF

Istb Vs Pin @ 115VAC

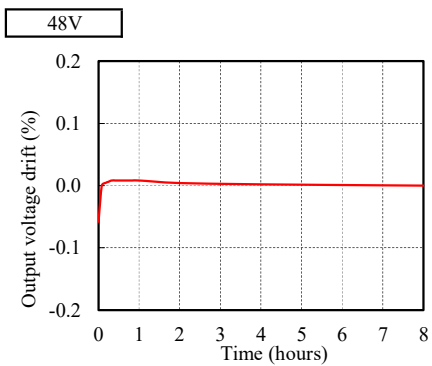
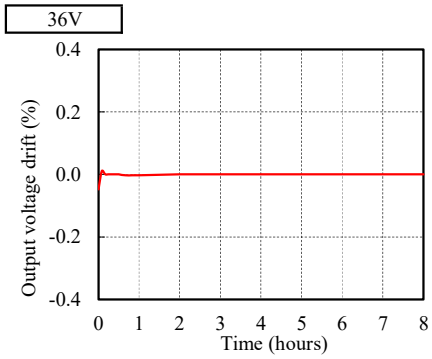
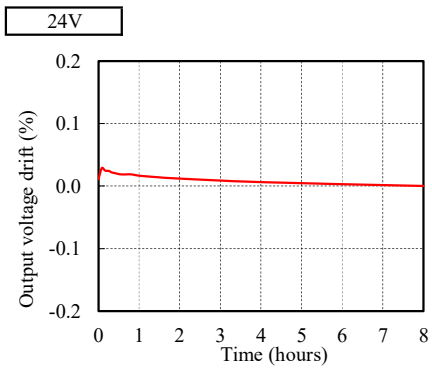
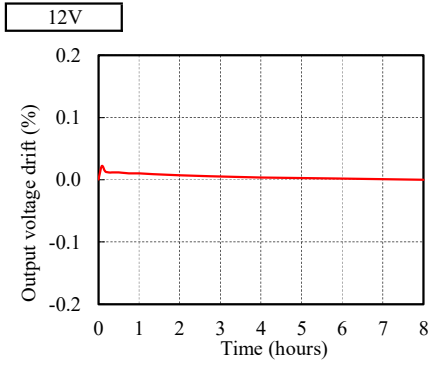


Istb Vs Pin @ 230VAC



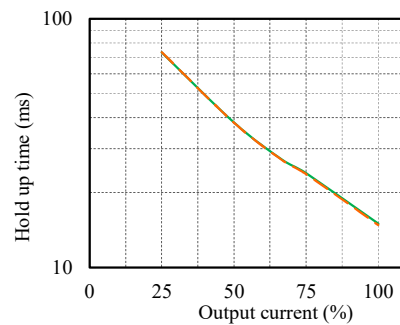
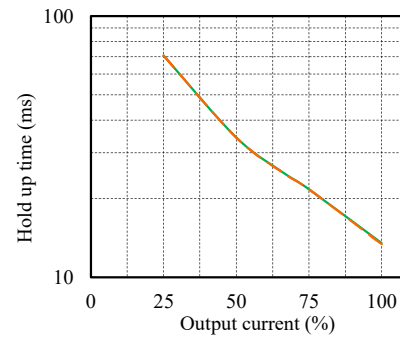
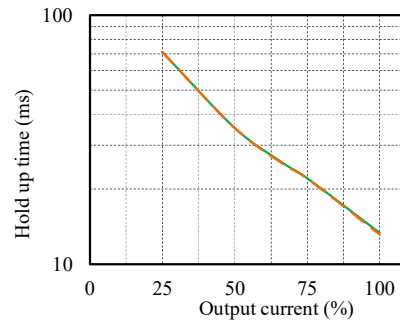
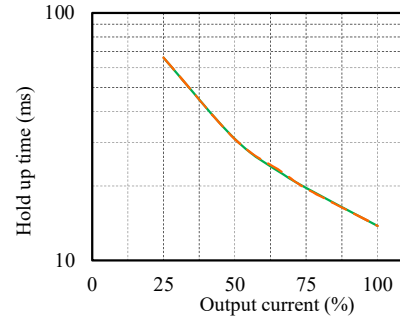
2-2. Warm up voltage drift characteristics

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



2-3. Hold up time characteristics

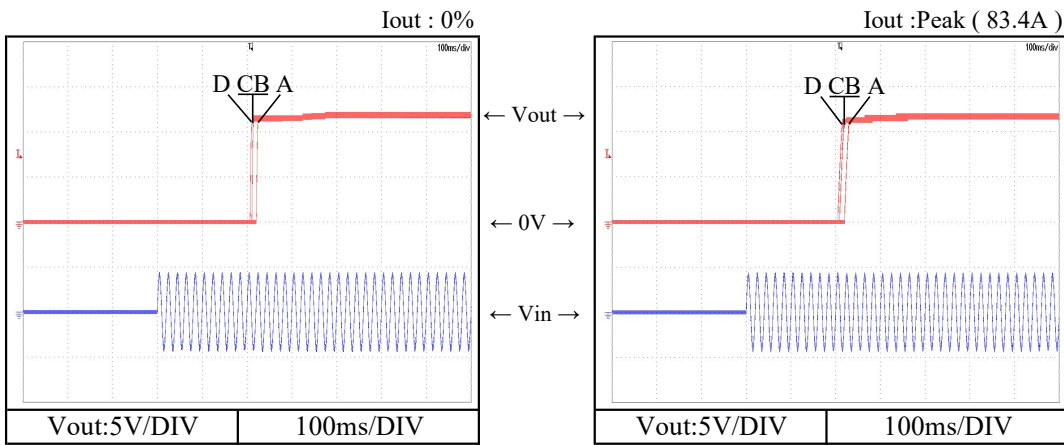
Conditions Vin : 115 VAC ———
 230 VAC - - - -
 Ta : 25 °C
 Istb : 100%



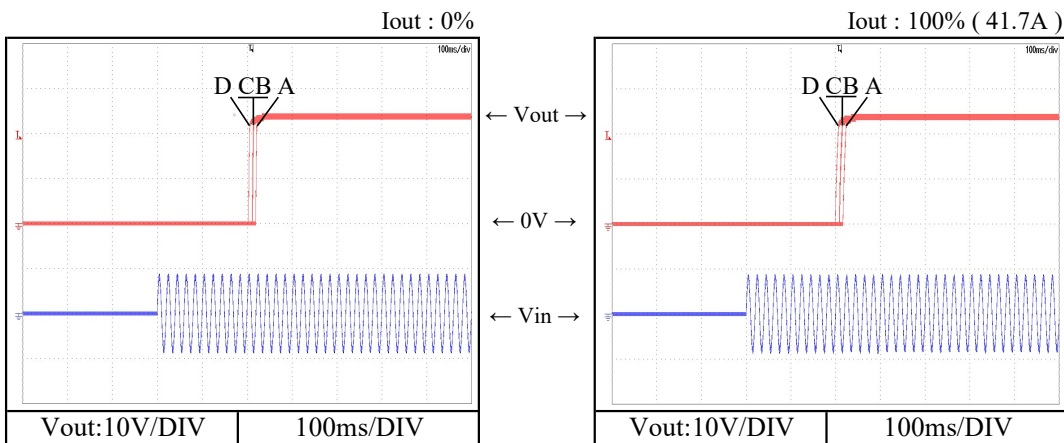
2-4. Output rise characteristics

Conditions Vin : 85 VAC (A)
 115 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Istb : 100 %
 Ta : 25 °C

12V



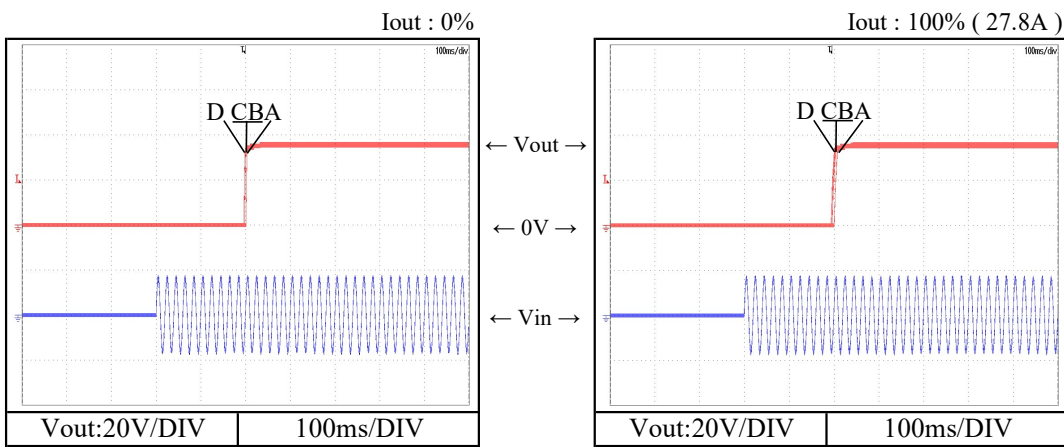
24V



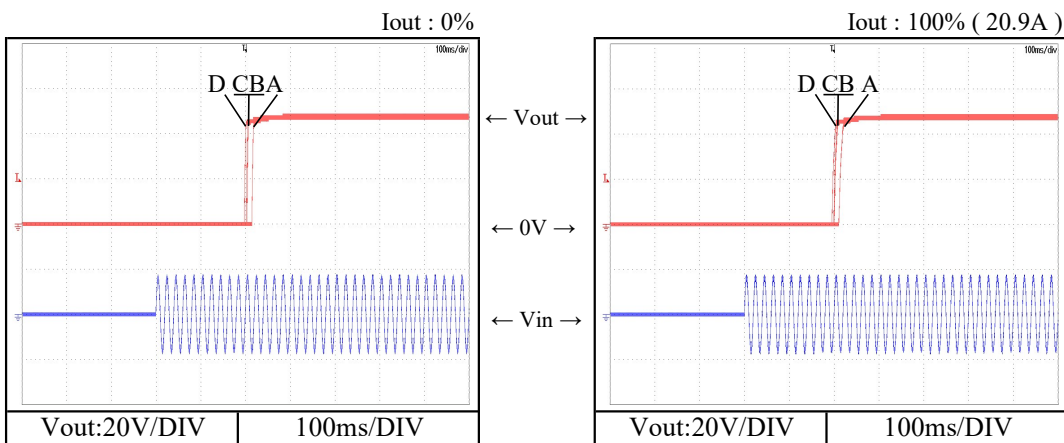
2-4. Output rise characteristics

Conditions Vin : 85 VAC (A)
 115 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Istb : 100 %
 Ta : 25 °C

36V



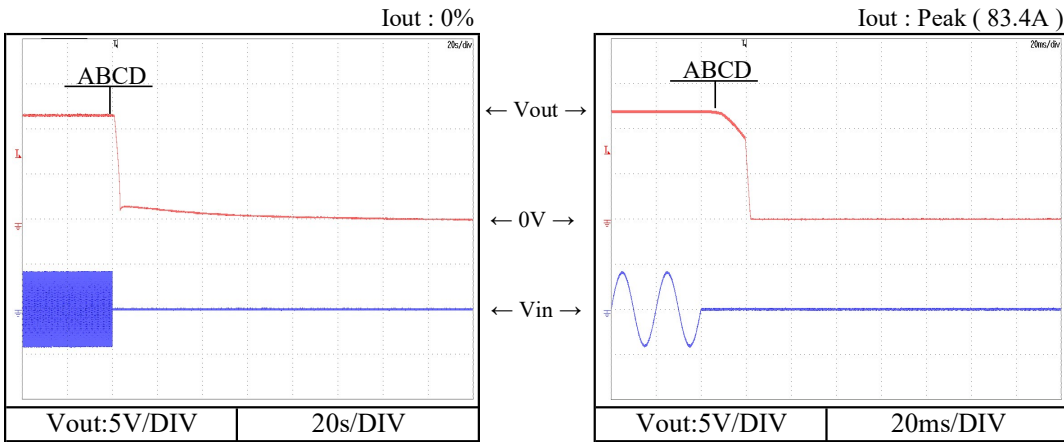
48V



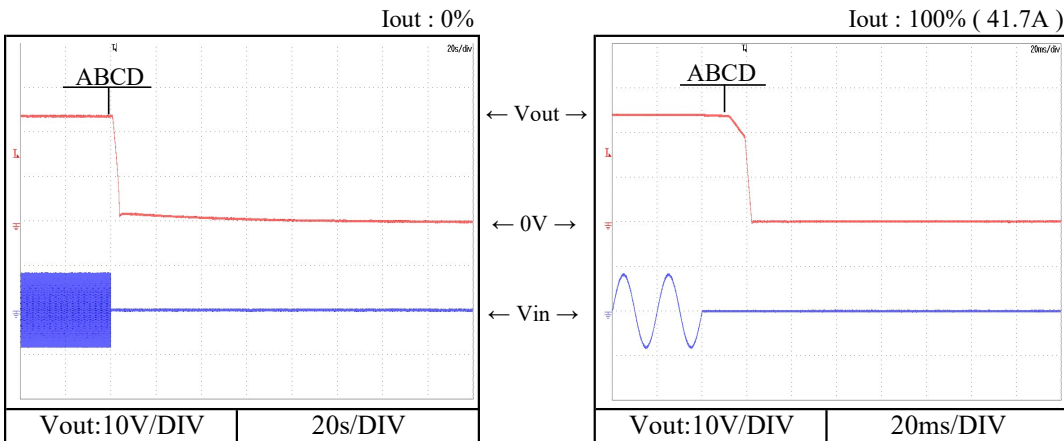
2-5. Output fall characteristics

Conditions Vin : 85 VAC (A)
 115 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Istb : 100 %
 Ta : 25 °C

12V



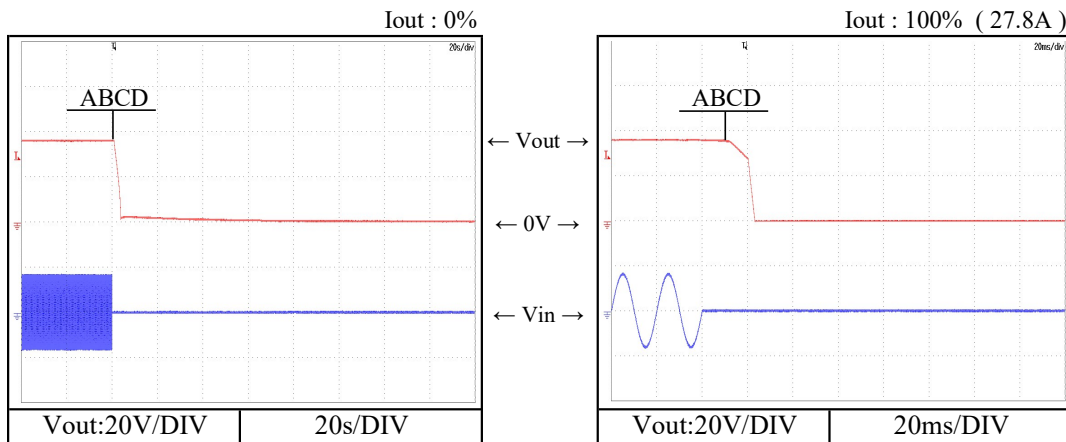
24V



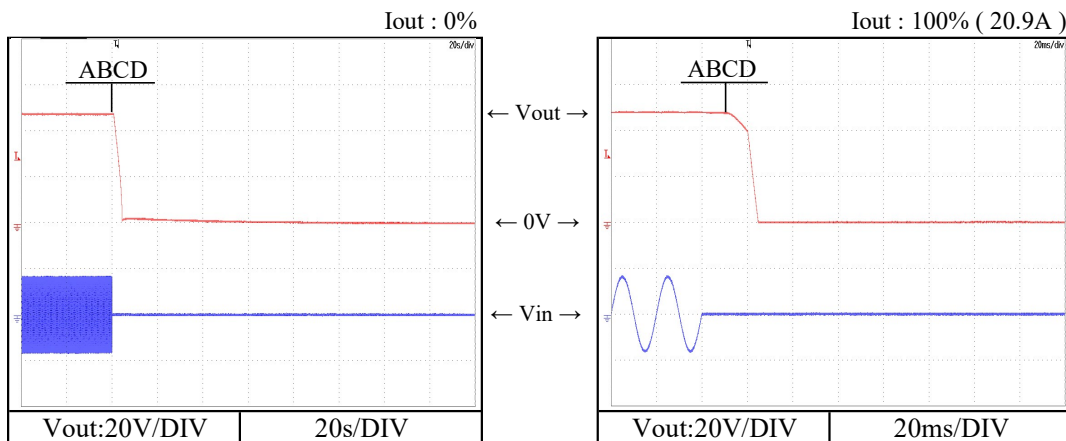
2-5. Output fall characteristics

Conditions Vin : 85 VAC (A)
 115 VAC (B)
 230 VAC (C)
 265 VAC (D)
 Istb : 100 %
 Ta : 25 °C

36V



48V

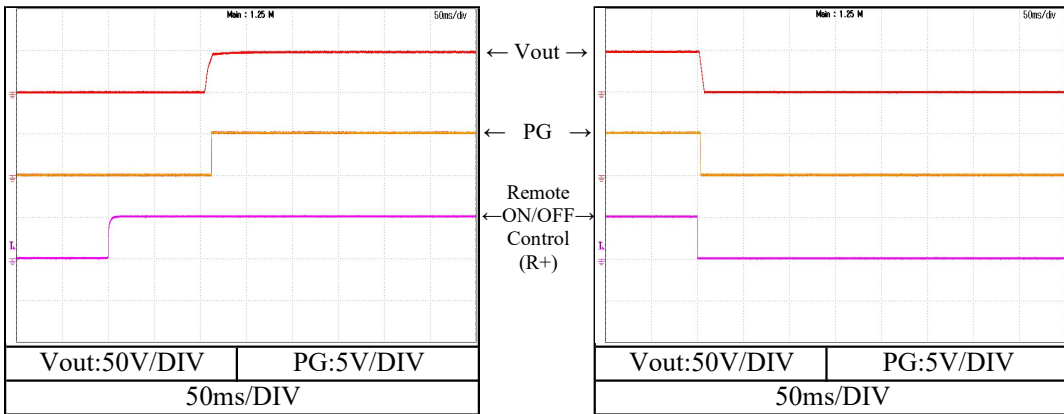


2-6. Various signal

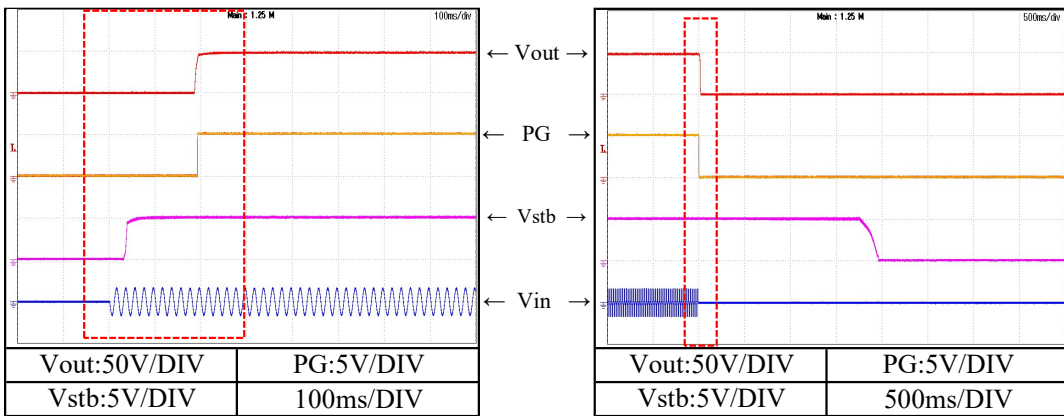
Conditions Vin : 115 VAC
 Iout : 100 %
 Istb : 100 %
 Ta : 25 °C

Output rise, fall characteristics with Remote ON/OFF Control

48V

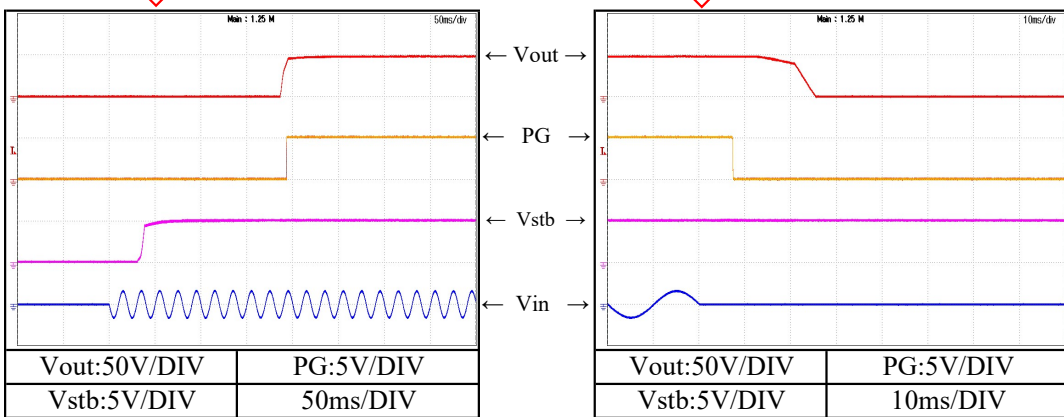


Output rise, fall characteristics with Input voltage ON/OFF



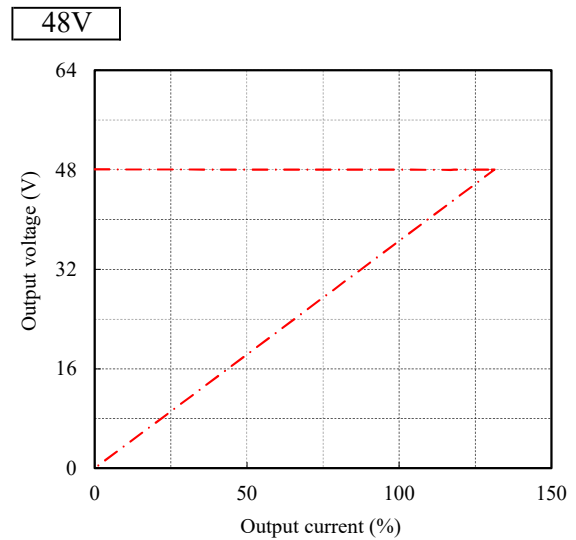
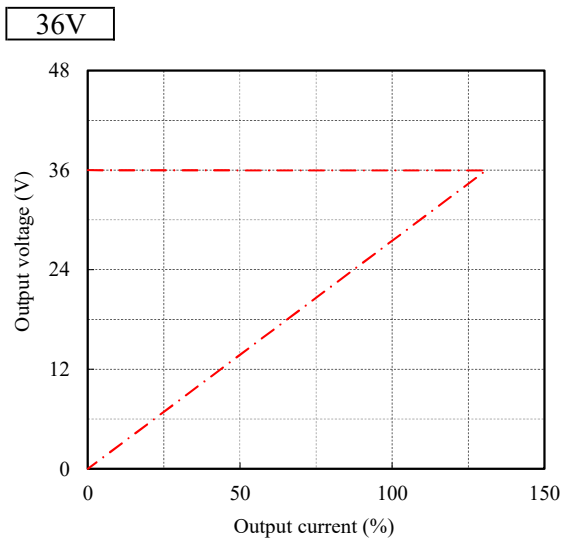
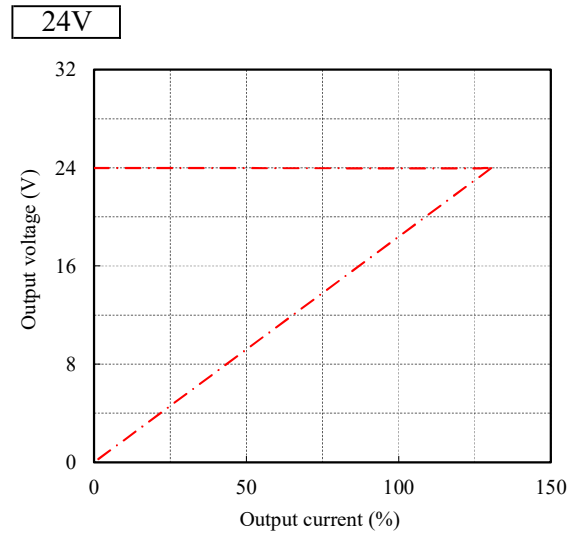
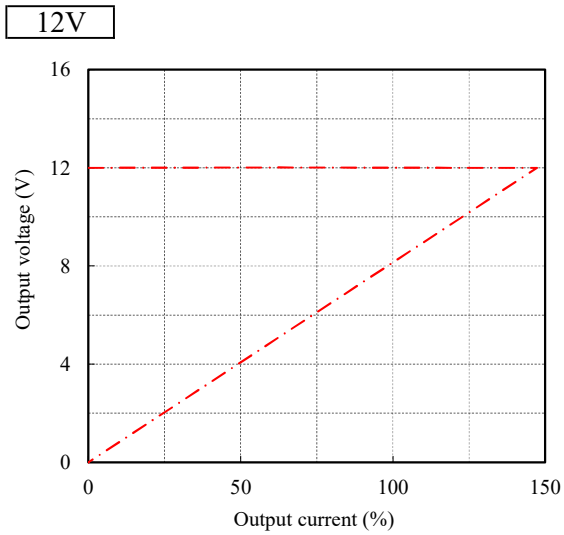
Zoom

Zoom



2-7. Over current protection (OCP) characteristics

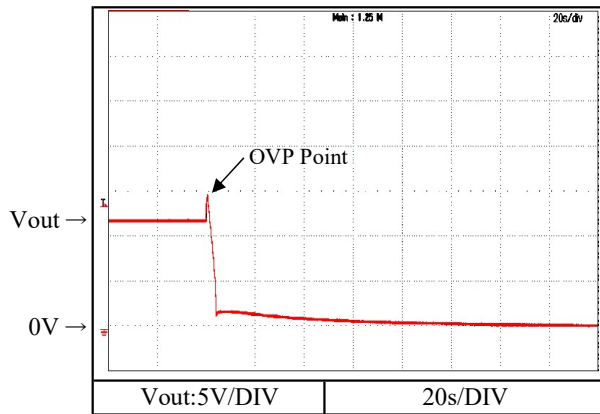
Conditions V_{in} : 115 VAC
 I_{stb} : 100 %
 T_a : 25 °C



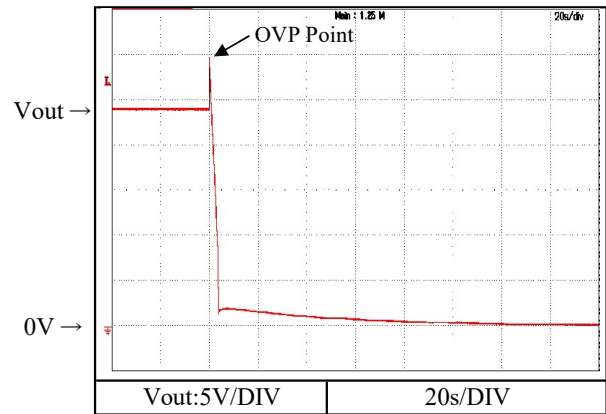
2-8. Over voltage protection (OVP) characteristics

Conditions Vin : 115 VAC
 Iout : 0 %
 Istb : 0 %
 Ta : 25 °C

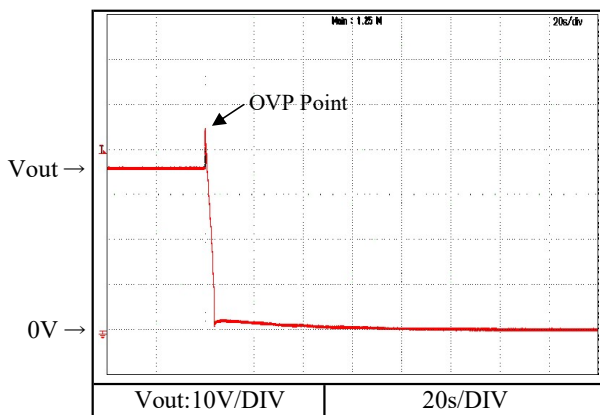
12V



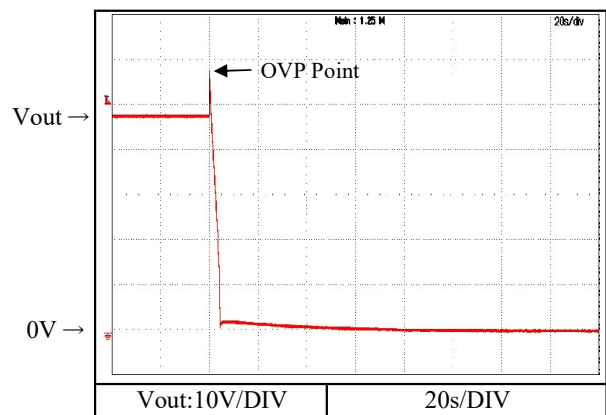
24V



36V



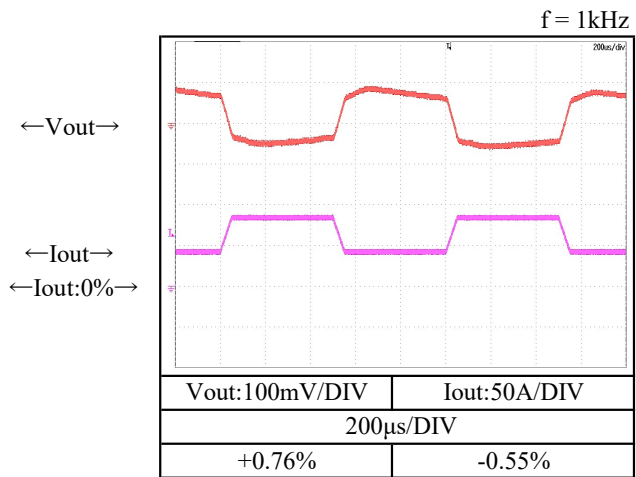
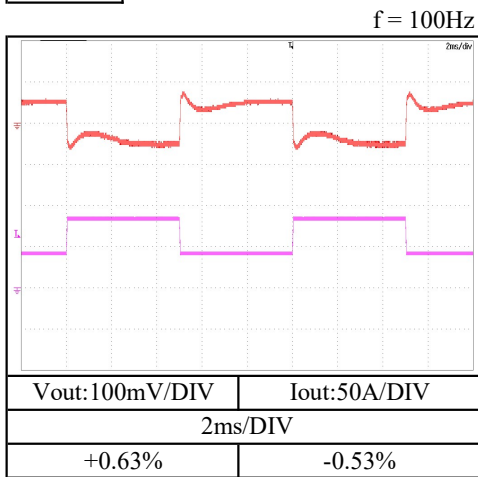
48V



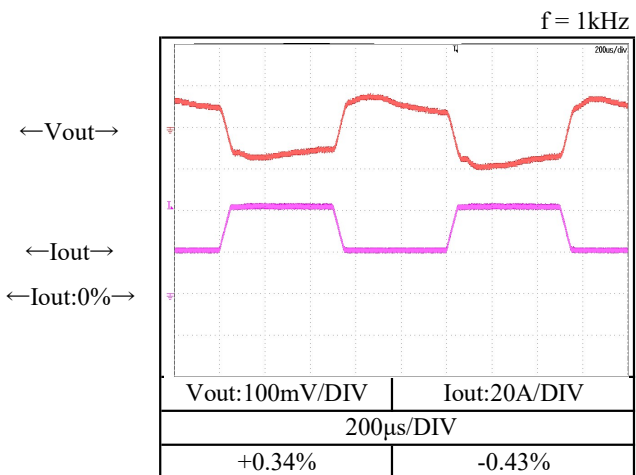
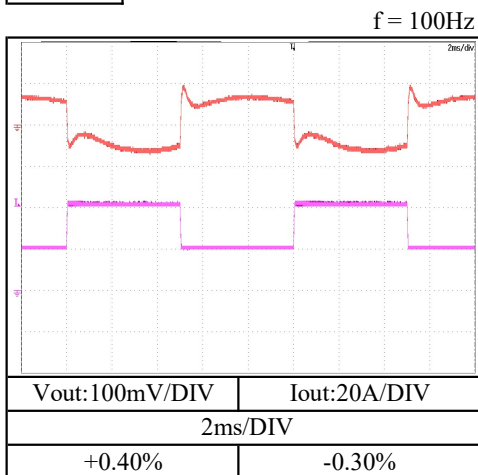
2-9. Dynamic load response characteristics

Conditions V_{in} : 115 VAC
 I_{out} : 50 % \leftrightarrow 100 % (Peak)
 ($t_r = t_f = 50\mu s$)
 I_{stb} : 100 %
 T_a : 25 °C

12V



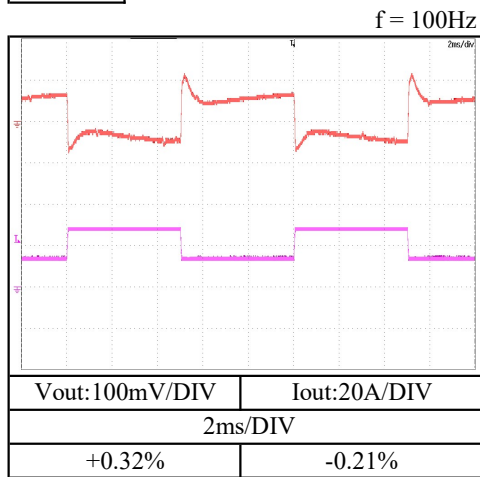
24V



2-9. Dynamic load response characteristics

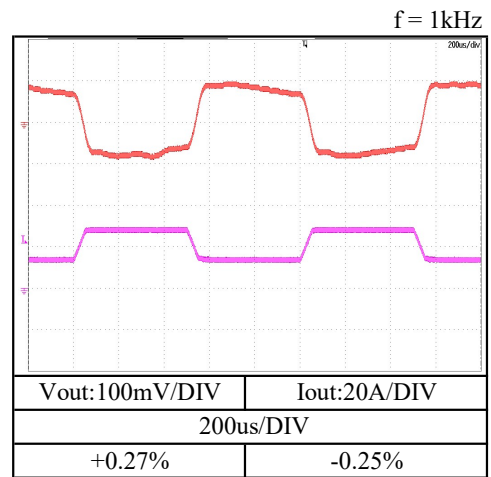
Conditions V_{in} : 115 VAC
 I_{out} : 50 % \leftrightarrow 100 %
 (tr = tf = 50us)
 I_{stb} : 100 %
 T_a : 25 °C

36V

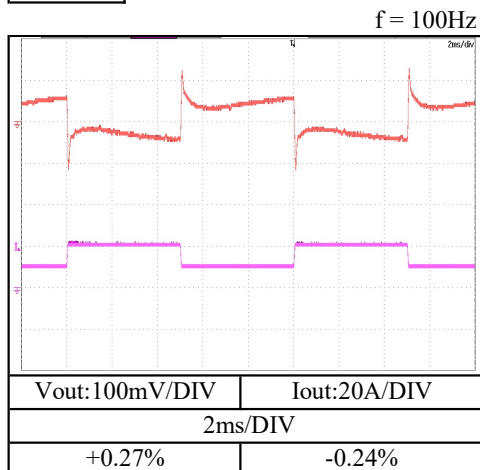


←Vout→

←Iout→
 ←Iout:0%→

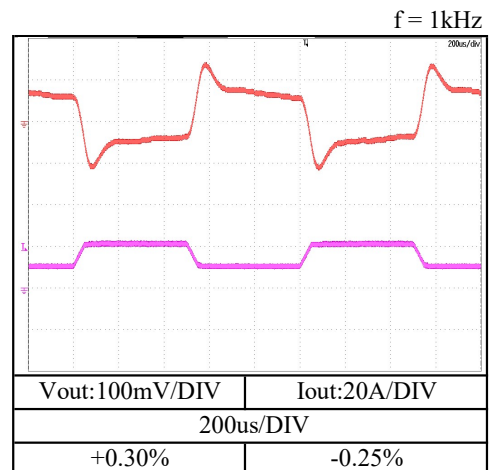


48V



←Vout→

←Iout→
 ←Iout:0%→

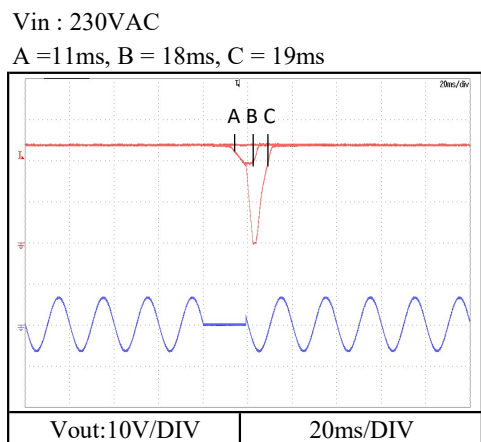
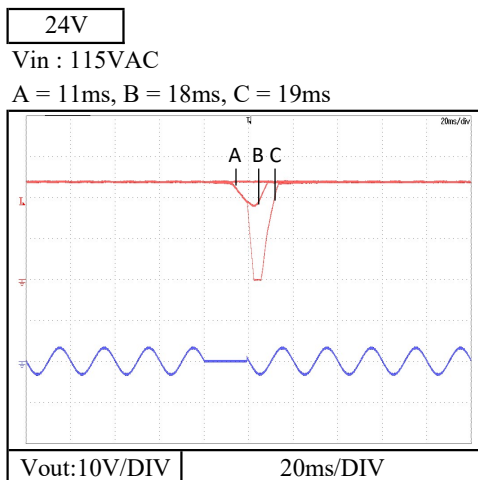
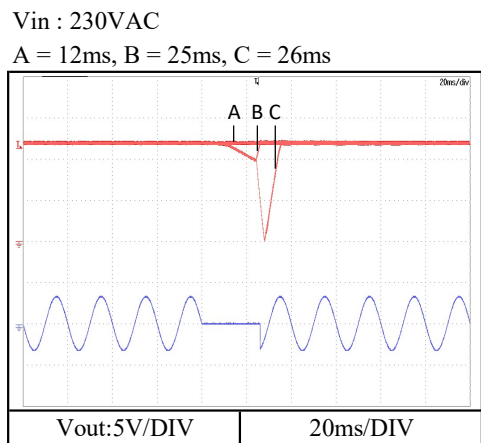
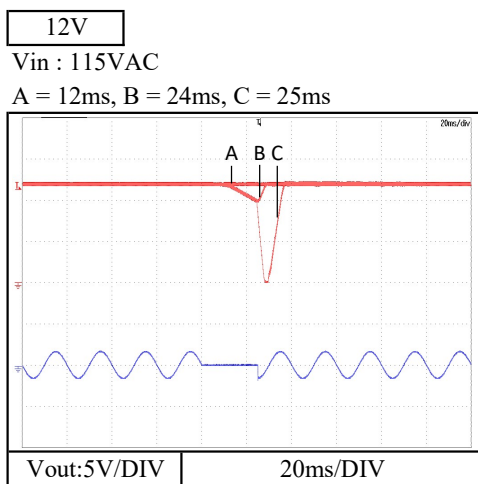


2-10. Response to brown out characteristics

Conditions
 Iout : 100 %
 Istb : 100 %
 Ta : 25 °C

Interruption time

- A : Output voltage does not drop.
- B : Output voltage drop down to 20~40% of the nominal output voltage.
- C : Output voltage drops until 0V.

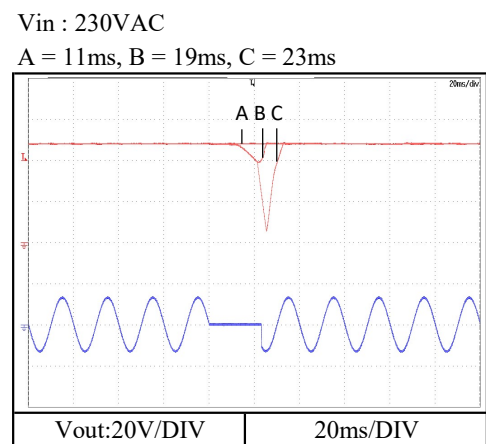
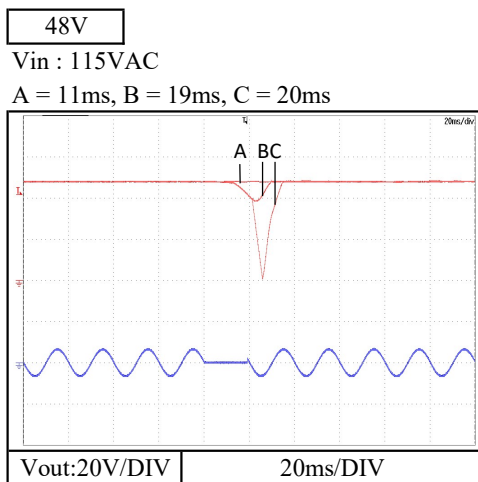
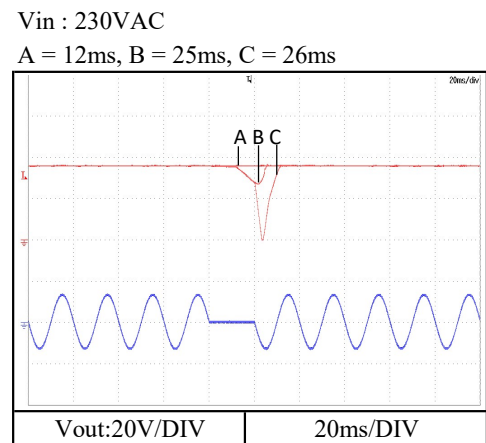
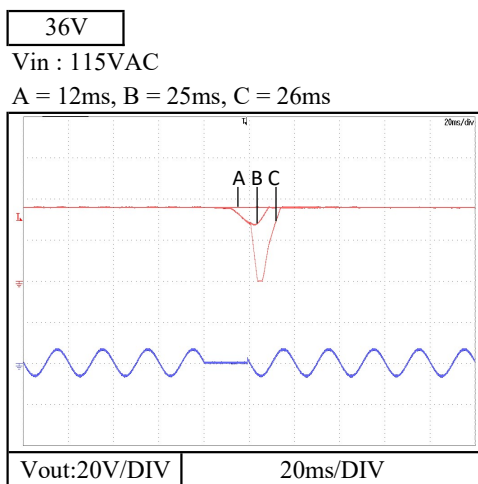


2-10. Response to brown out characteristics

Conditions
 Iout : 100 %
 Istb : 100 %
 Ta : 25 °C

Interruption time

- A : Output voltage does not drop.
- B : Output voltage drop down to 20~40% of the nominal output voltage.
- C : Output voltage drops until 0V.

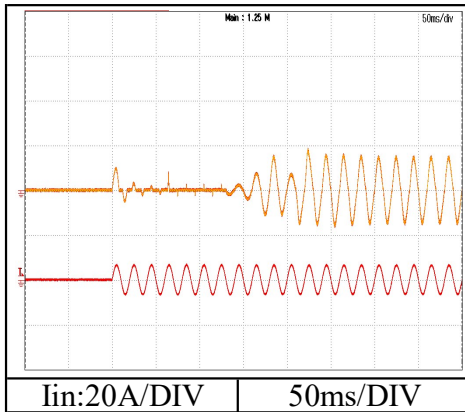


2-11. Inrush current waveform

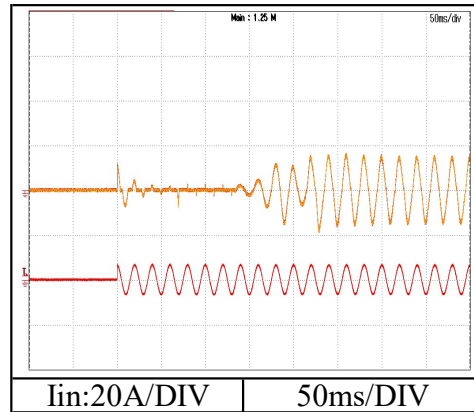
Conditions Vin : 115 VAC
 Iout : 100 % (20.9A)
 Istb : 100 %
 Ta : 25 °C

48V

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

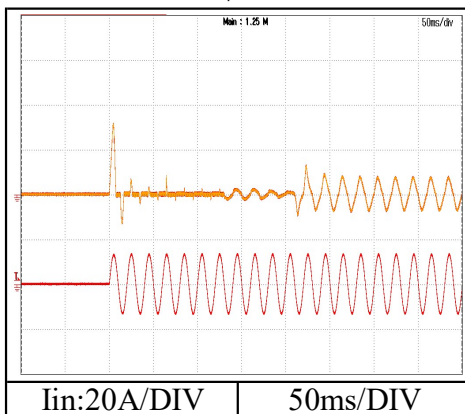


Switch on phase angle of input AC voltage
 $\phi = 90^\circ$

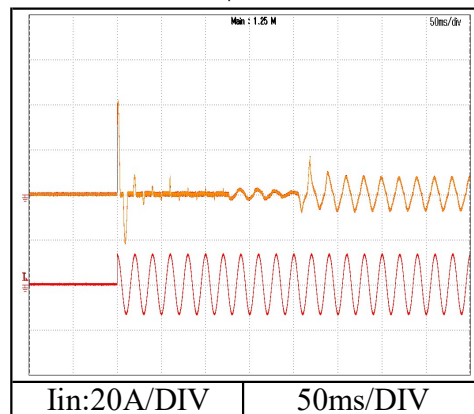


Conditions Vin : 230 VAC
 Iout : 100 % (20.9A)
 Istb : 100 %
 Ta : 25 °C

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



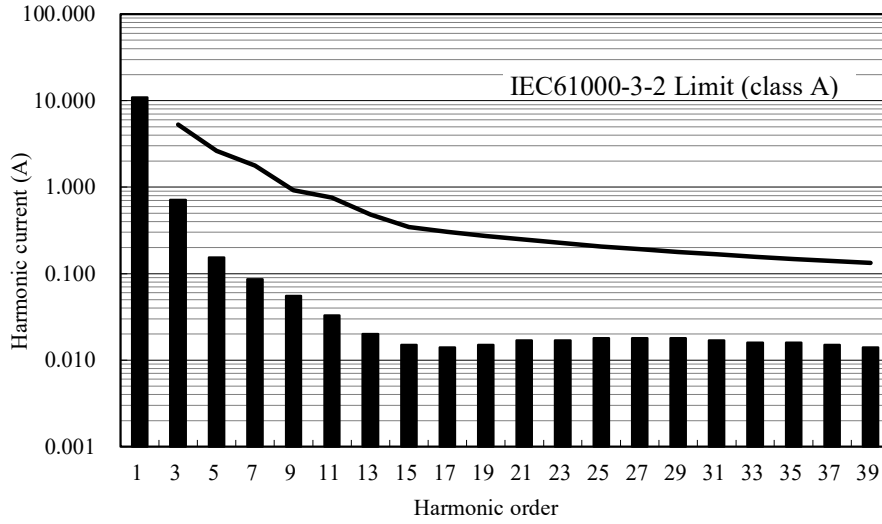
Switch on phase angle of input AC voltage
 $\phi = 90^\circ$



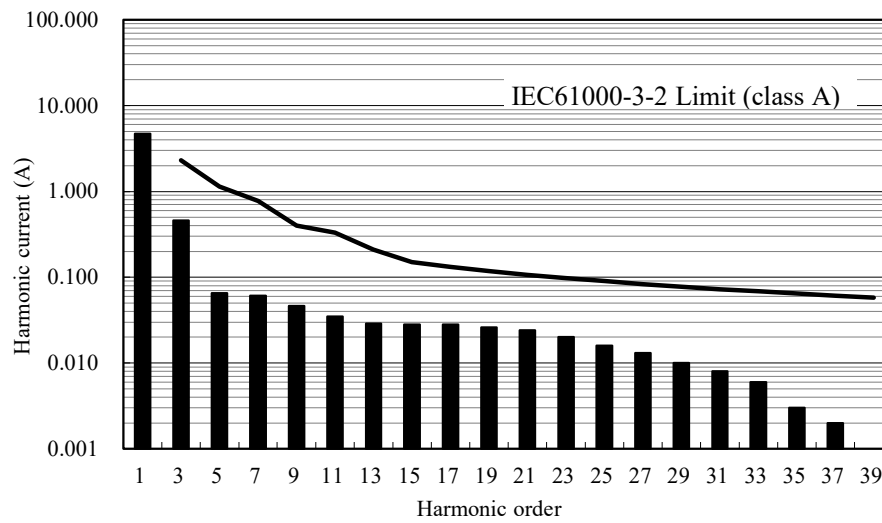
2-12. Input current harmonics

Conditions Vin : 100 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

48V



Conditions Vin : 230 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

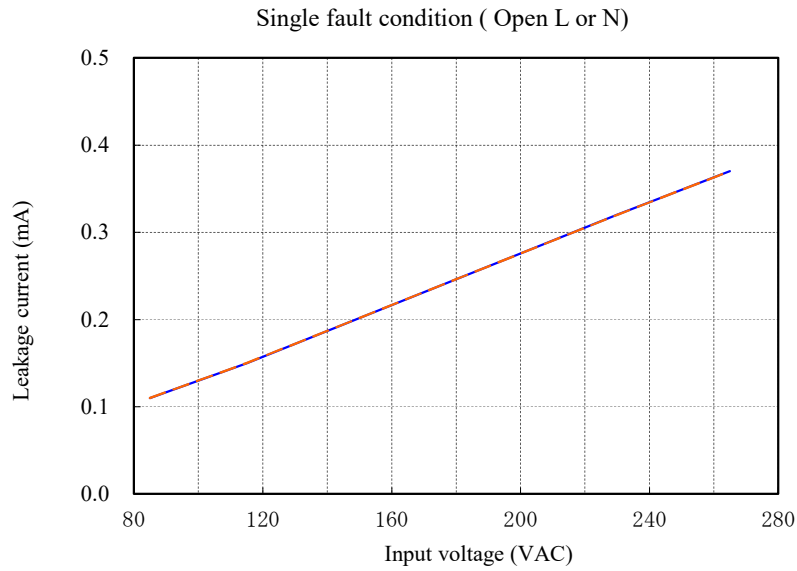
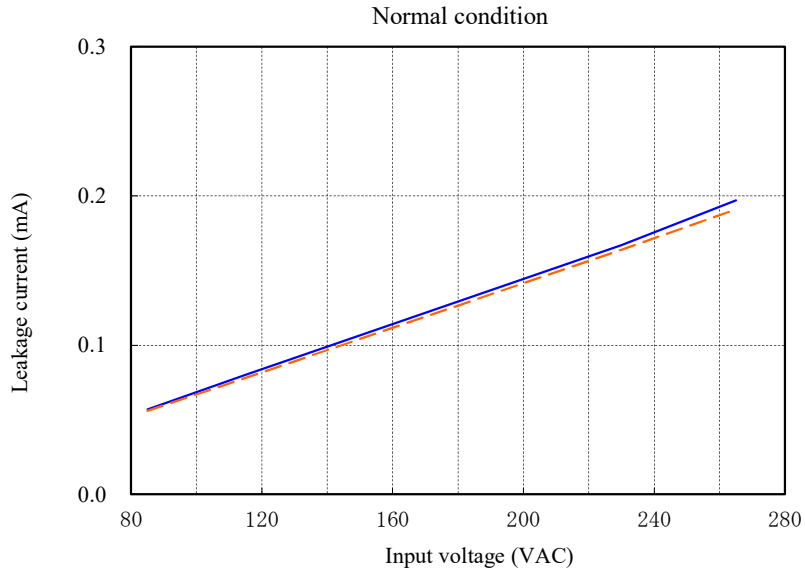


2-13. Leakage current characteristics

Earth leakage current of CLASS I equipment

Conditions Iout : 0 % ———
 100 % - - - -
 Ta : 25 °C
 Istb : 100 %
 f : 60 Hz

48V

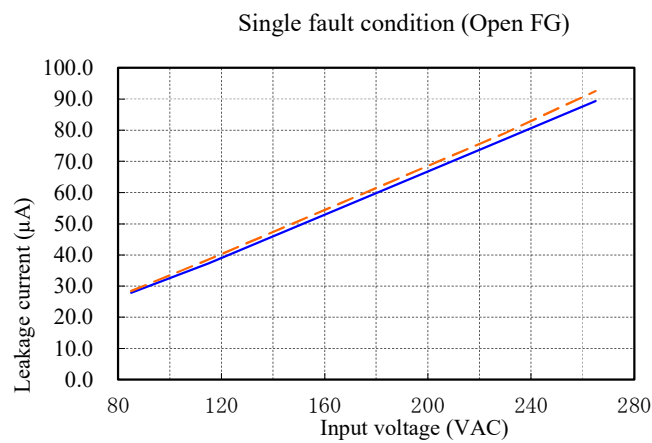
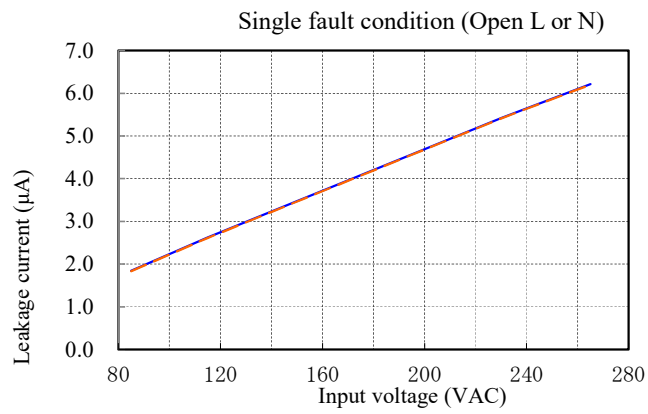
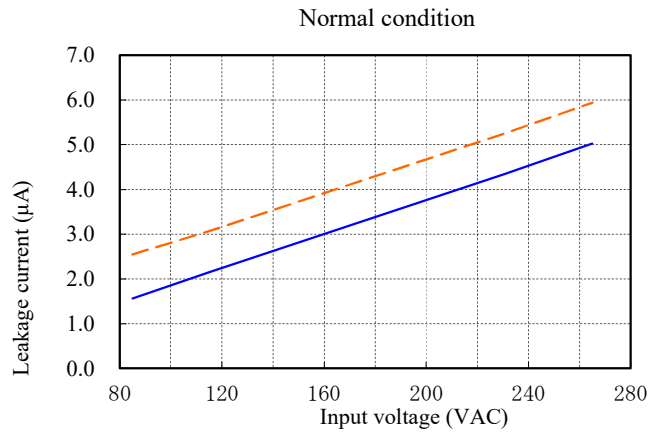


2-13. Leakage current characteristics

Patient leakage current of CLASS I equipment

Conditions Iout : 0 % ———
 100 % - - - -
 Ta : 25 °C
 Istb : 100 %
 f : 60 Hz

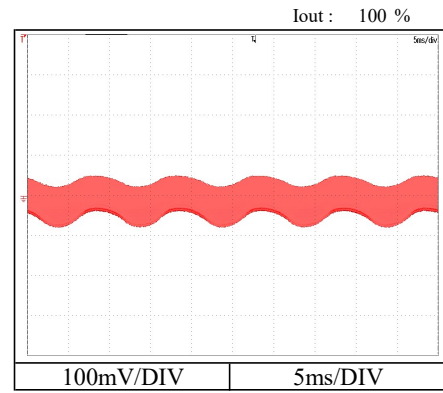
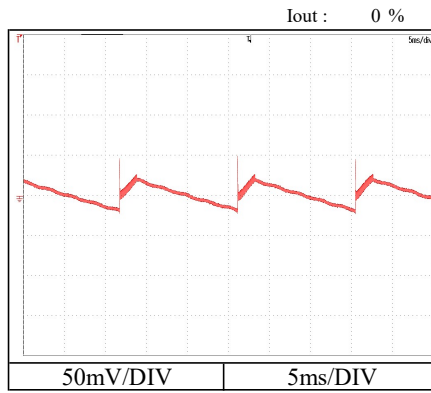
48V



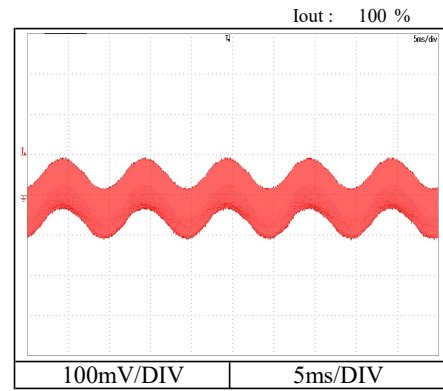
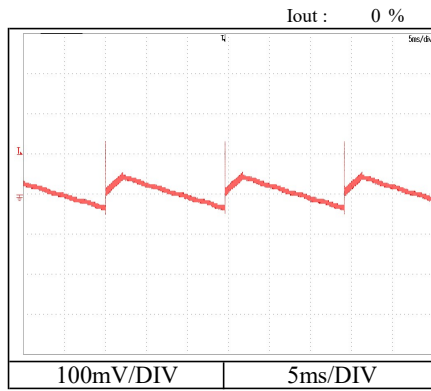
2-14. Output ripple and noise waveform

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

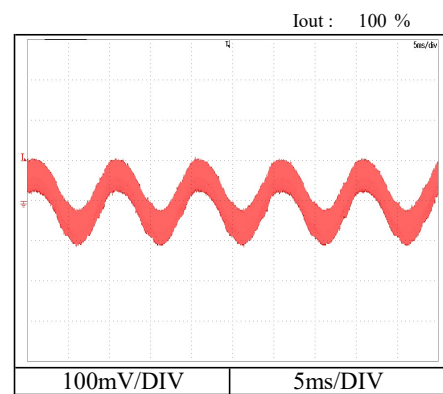
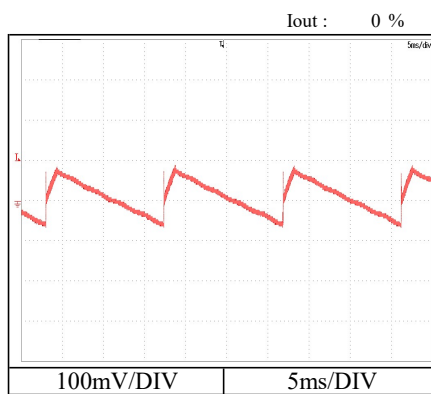
12V



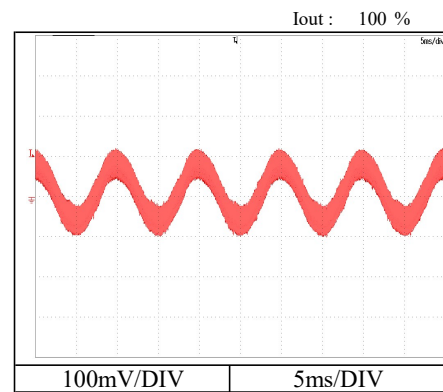
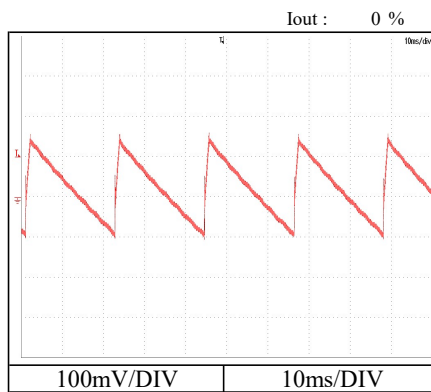
24V



36V



48V



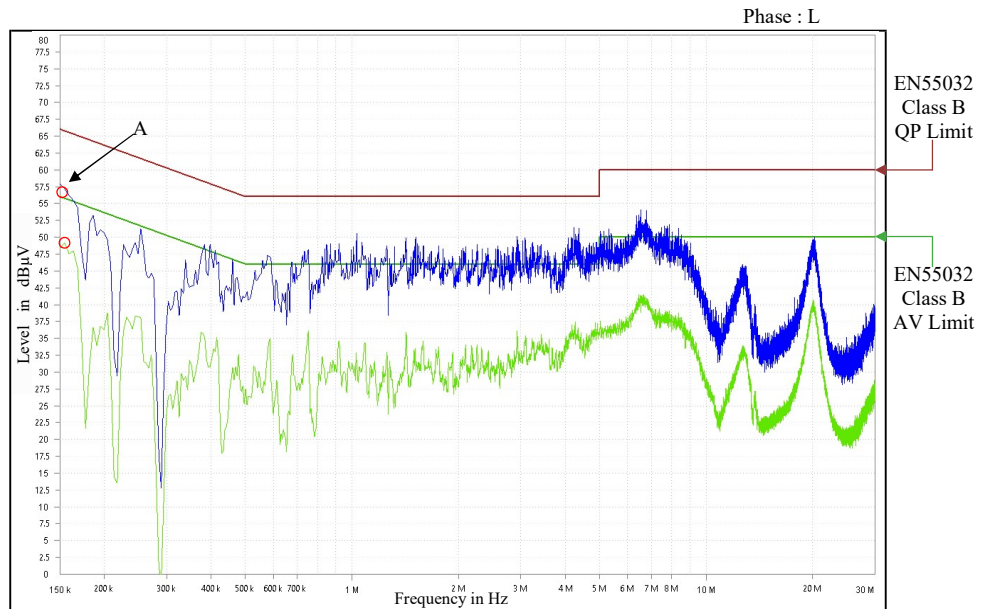
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
 Iout : 66.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

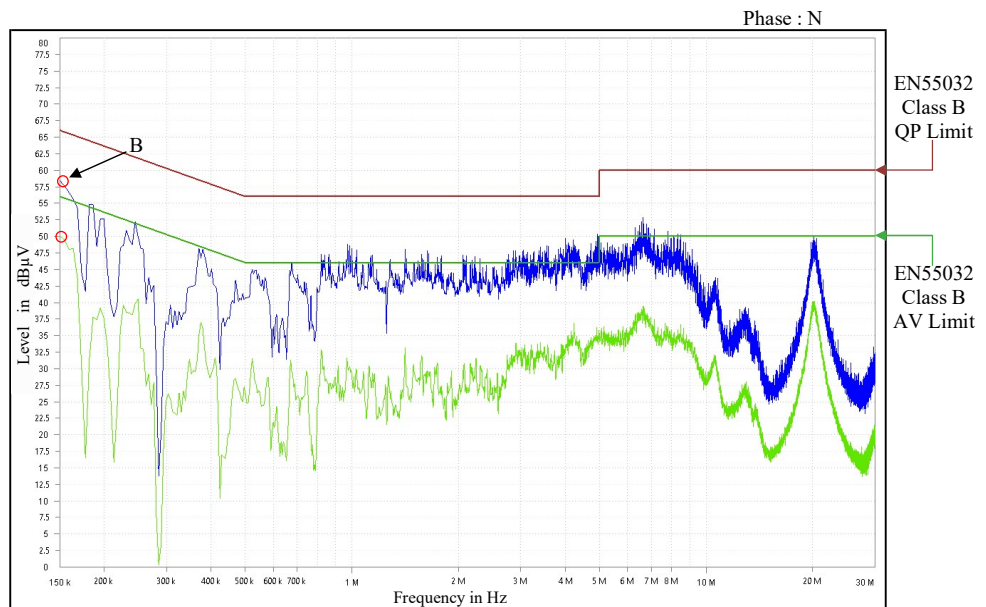
Conducted Emission

12V

Point A (155kHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	65.8	56.8
AV	55.8	49.1



Point B (150kHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	66.0	57.8
AV	56.0	49.7



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

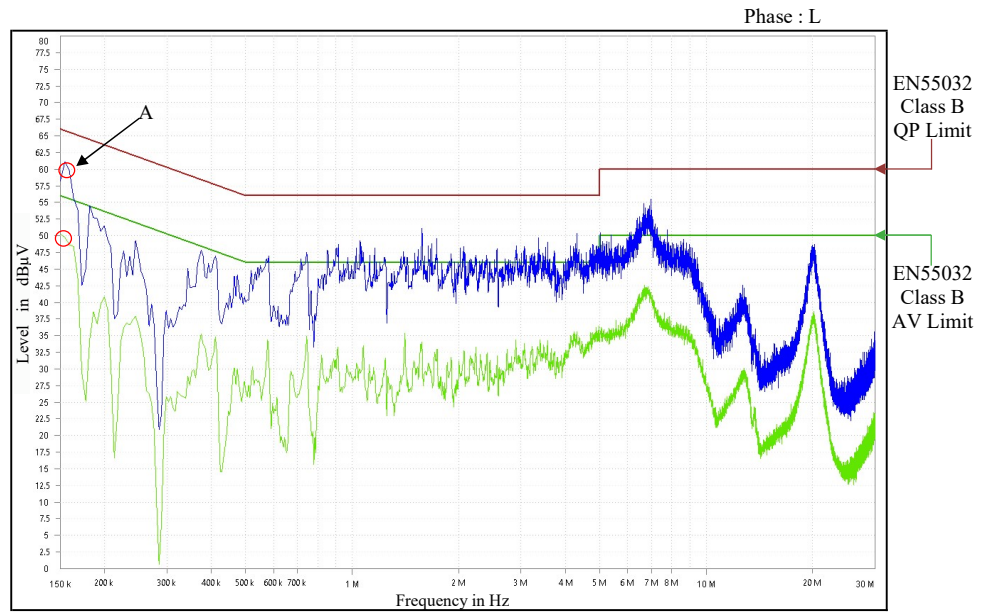
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
 Iout : 66.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

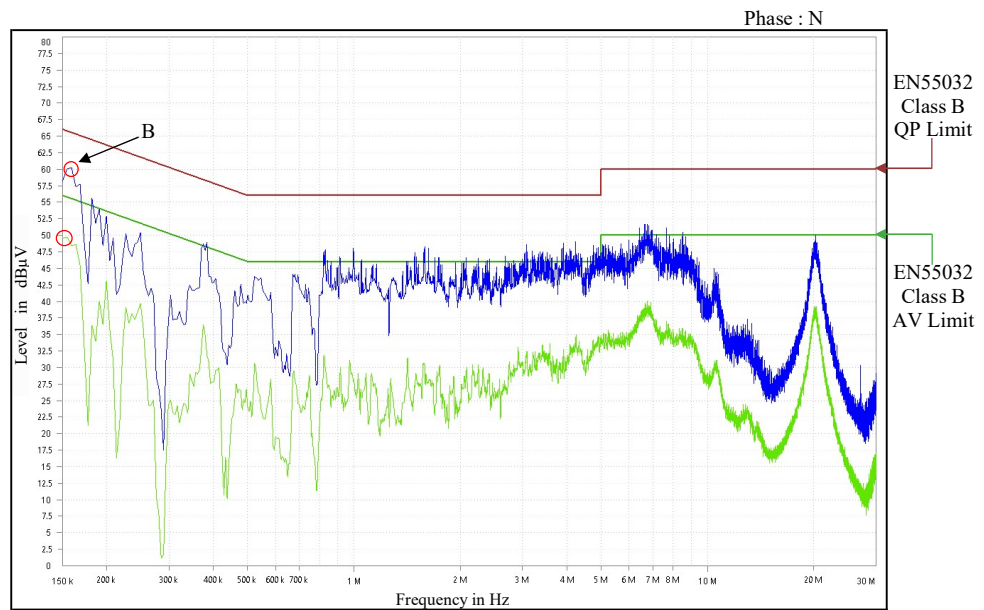
Conducted Emission

12V

Point A (155kHz)		
Ref.	Limit (dB)	Measure (dB)
QP	65.8	59.4
AV	56.0	49.9



Point B (159kHz)		
Ref.	Limit (dB)	Measure (dB)
QP	65.5	58.6
AV	55.8	49.5



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

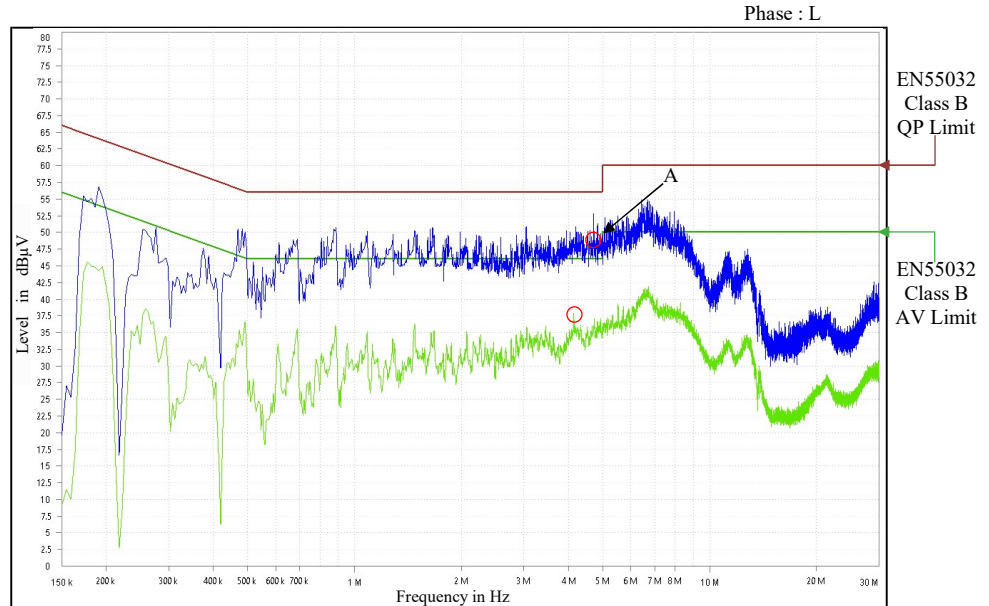
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
 Iout : 41.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

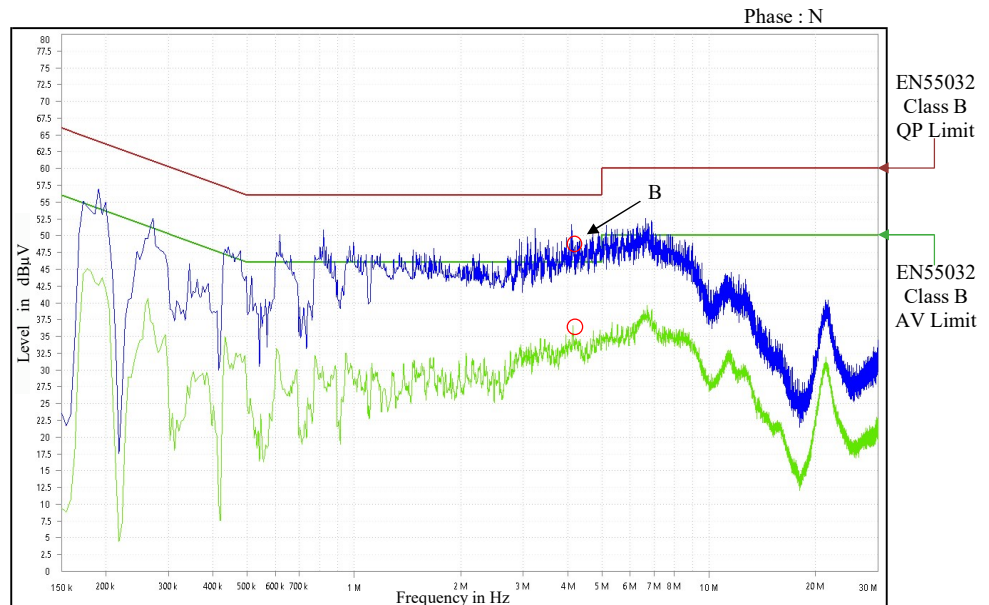
Conducted Emission

24V

Point A (4.5MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	56.0	47.3
AV	46.0	37.3



Point B (4.1MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	56.0	47.0
AV	46.0	35.8



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

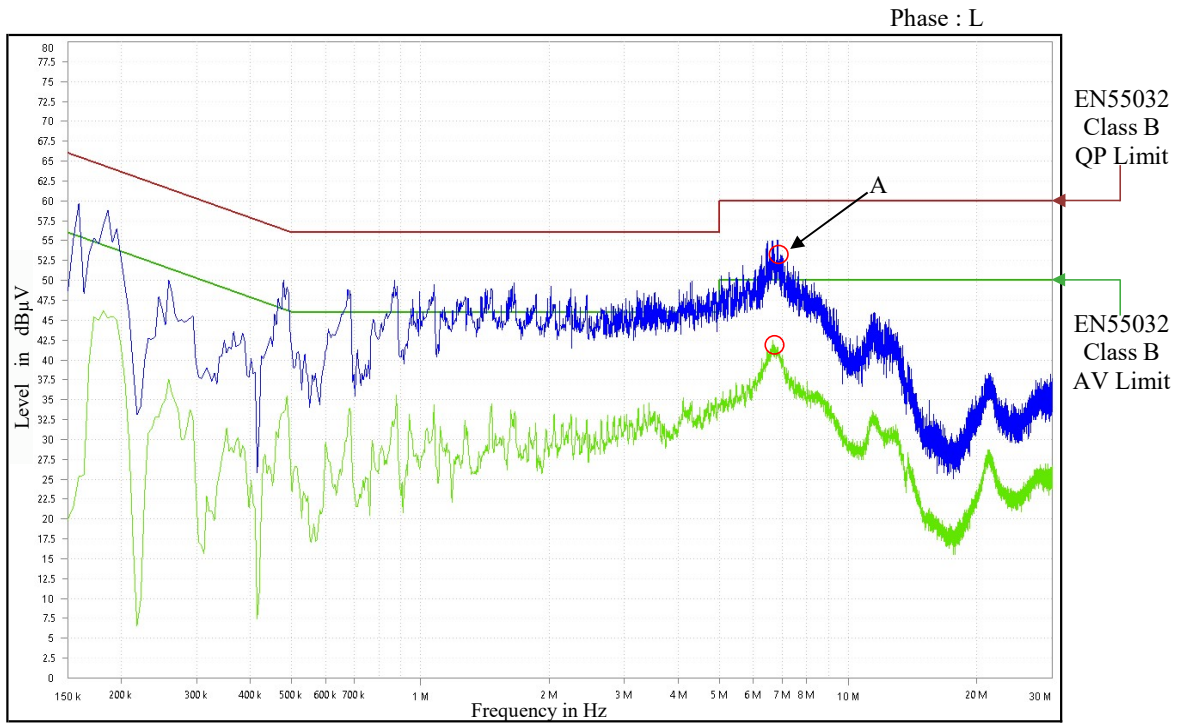
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
 Iout : 41.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

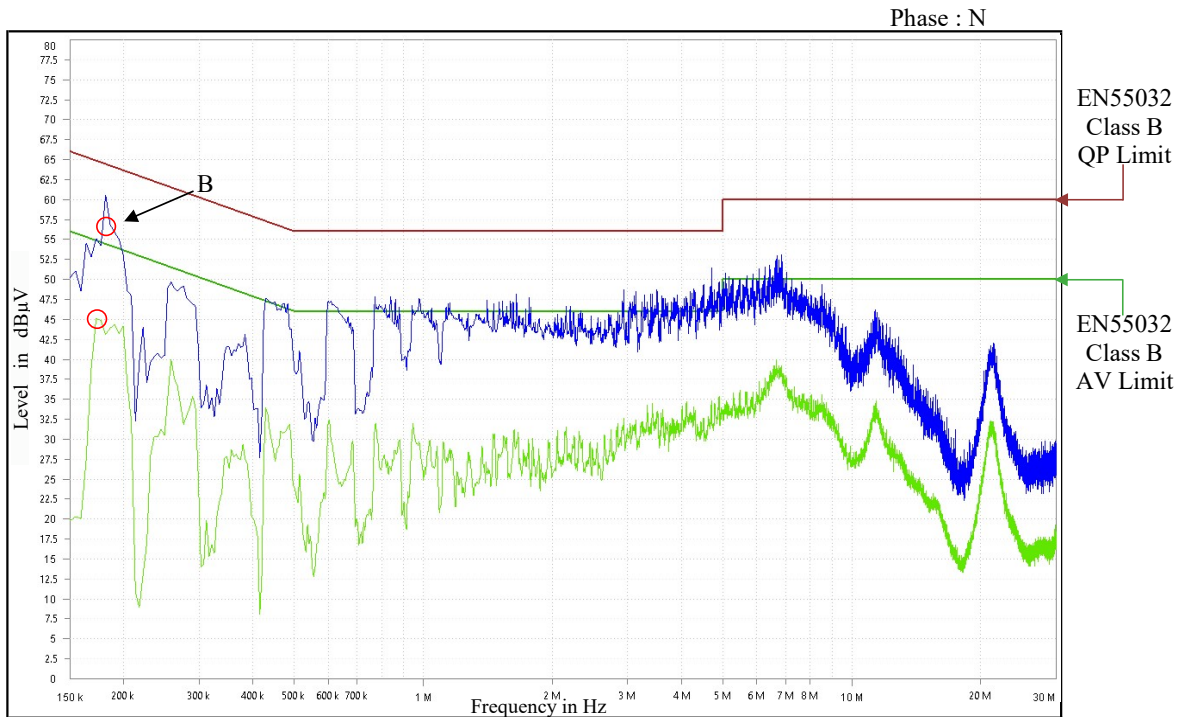
Conducted Emission

24V

Point A (6.8MHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	60.0	51.0
AV	50.0	41.5



Point B (182KHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	64.4	55.6
AV	54.0	44.8



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

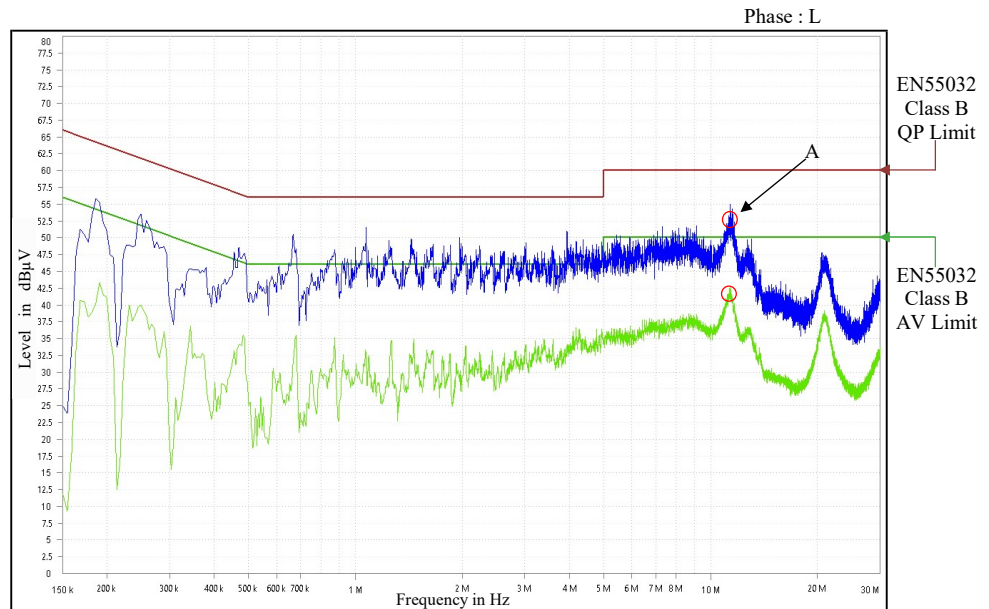
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
 Iout : 27.8 A (100%)
 Istb : 100 %
 Ta : 25 °C

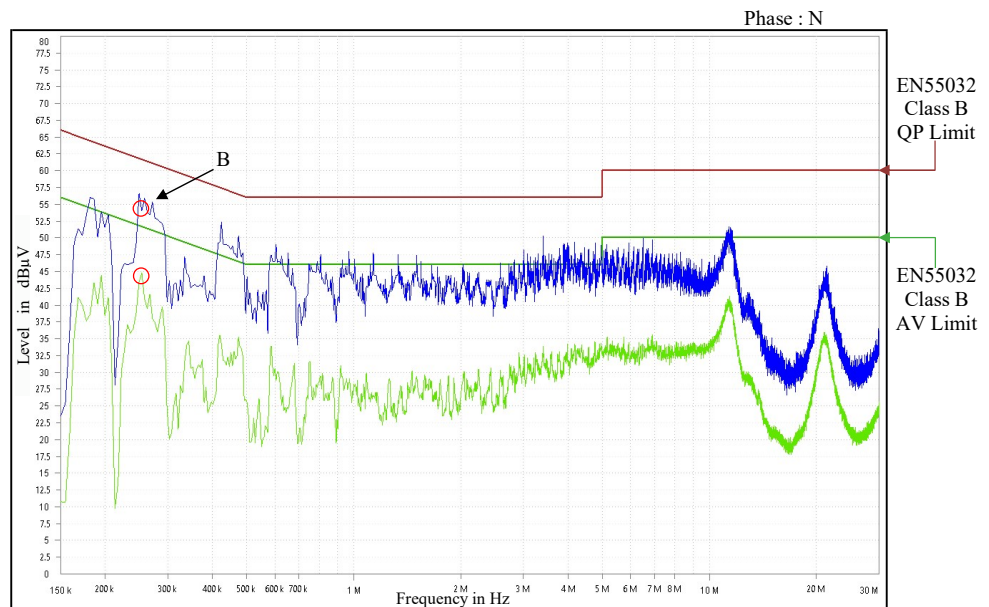
Conducted Emission

36V

Point A (11MHz)		
Ref.	Limit (dB)	Measure (dB)
QP	60.0	50.9
AV	50.0	41.3



Point B (249KHz)		
Ref.	Limit (dB)	Measure (dB)
QP	61.8	53.8
AV	51.6	43.9



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

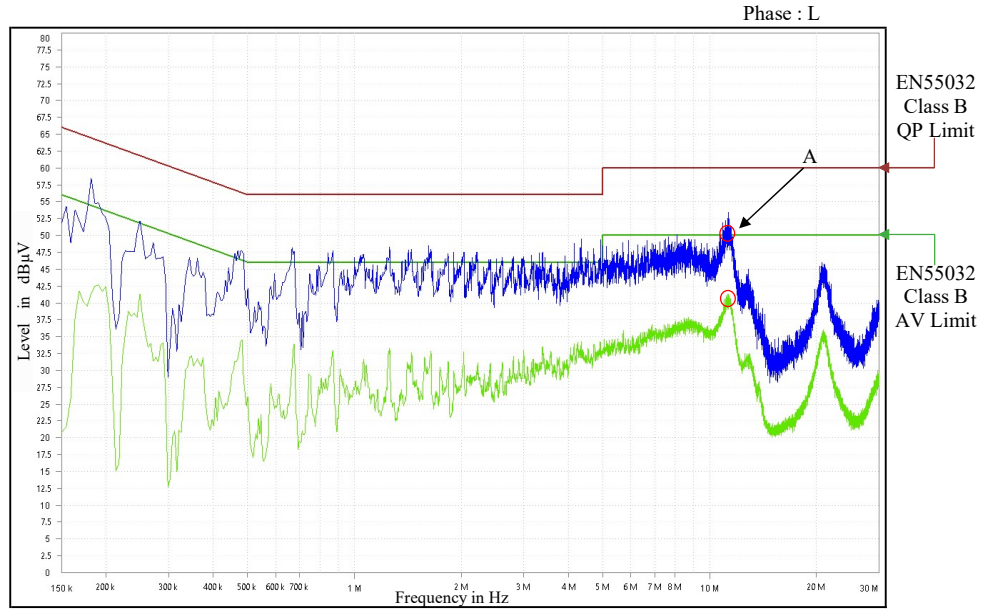
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
 Iout : 27.8 A (100%)
 Istb : 100 %
 Ta : 25 °C

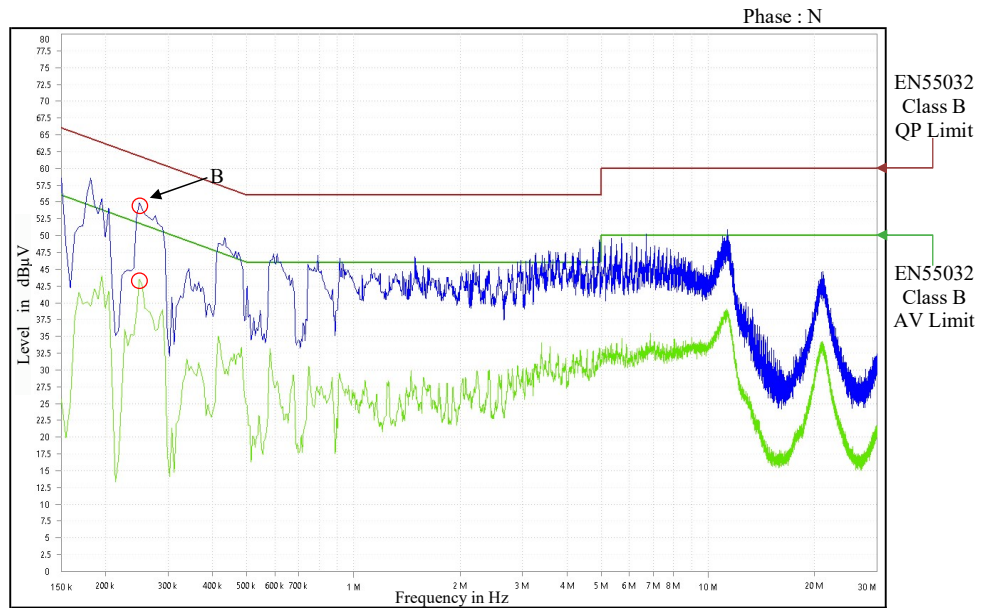
Conducted Emission

36V

Point A (11MHz)		
Ref.	Limit (dB)	Measure (dB)
QP	60.0	50.3
AV	50.0	40.1



Point B (249KHz)		
Ref.	Limit (dB)	Measure (dB)
QP	61.8	53.6
AV	51.8	43.0



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

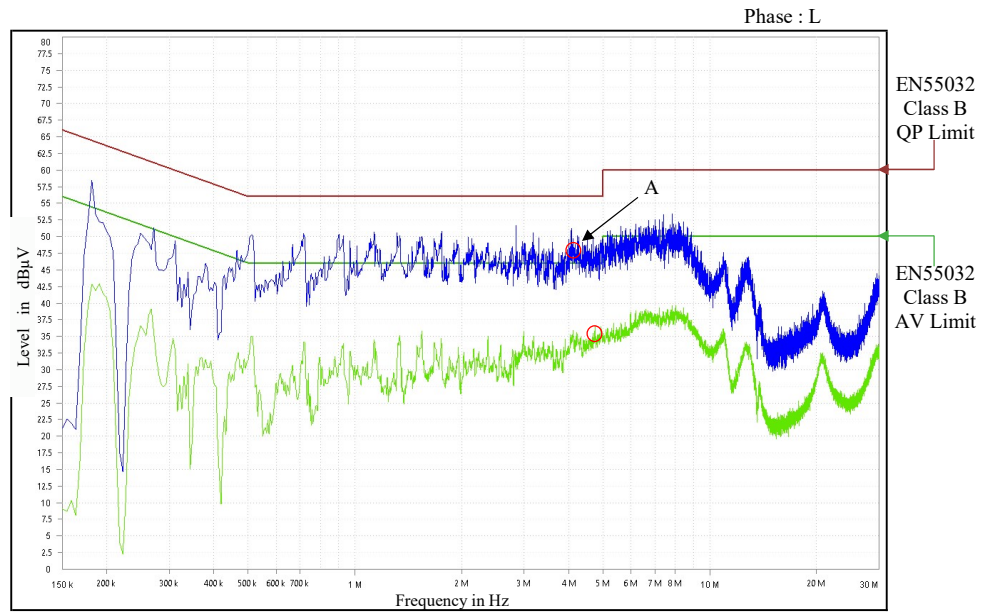
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

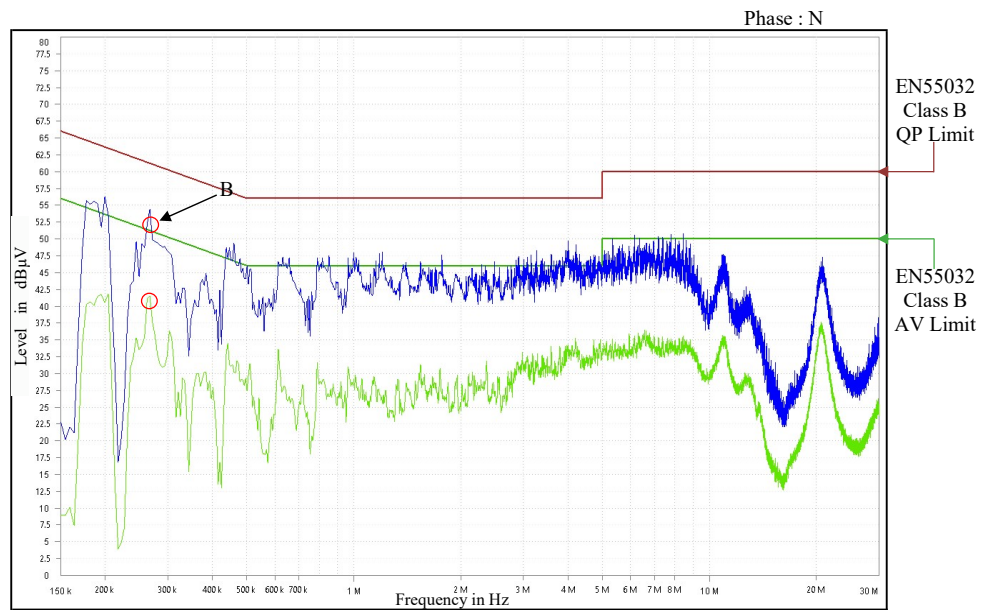
Conducted Emission

48V

Point A 4.5MHz		
Ref.	Limit (dB)	Measure (dB)
QP	56.0	46.3
AV	46.0	35.2



Point B (267KHz)		
Ref.	Limit (dB)	Measure (dB)
QP	61.2	52.3
AV	51.2	40.8



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

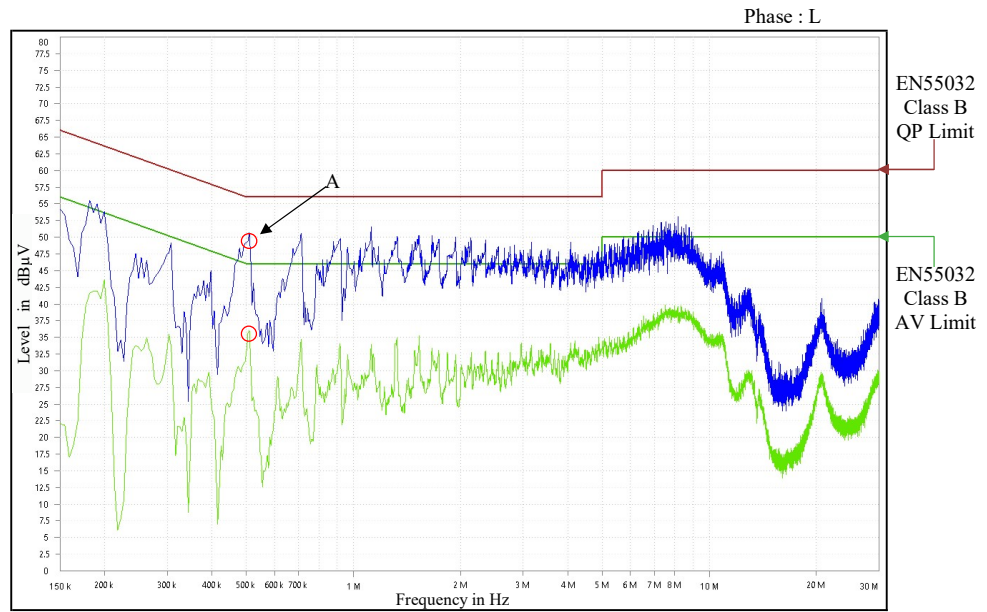
2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 230 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

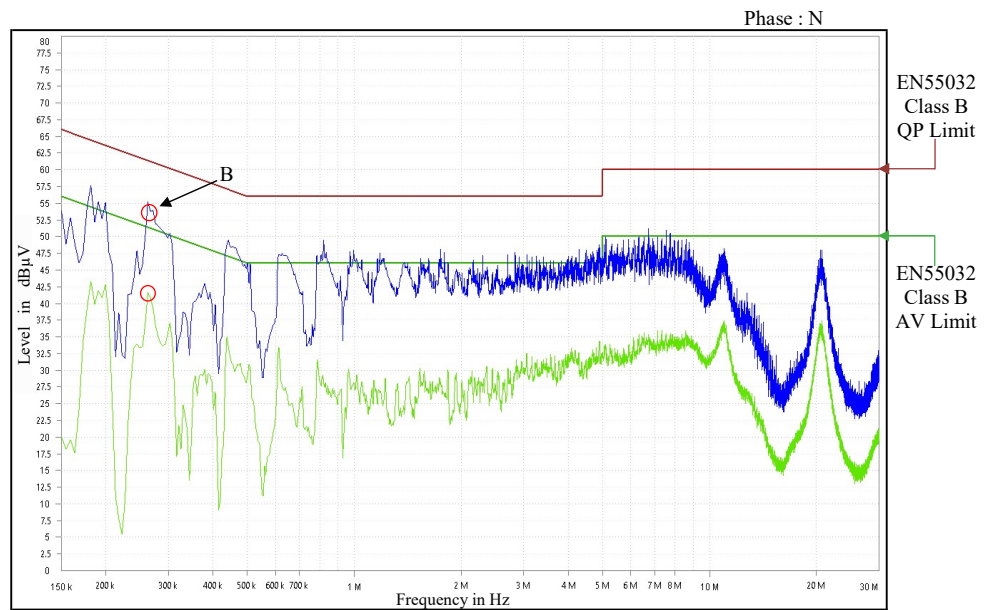
Conducted Emission

48V

Point A (510KHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	56.0	49.1
AV	46.0	35.6



Point B (263kHz)		
Ref. Data	Limit (dB)	Measure (dB)
QP	61.4	52.7
AV	51.4	41.6



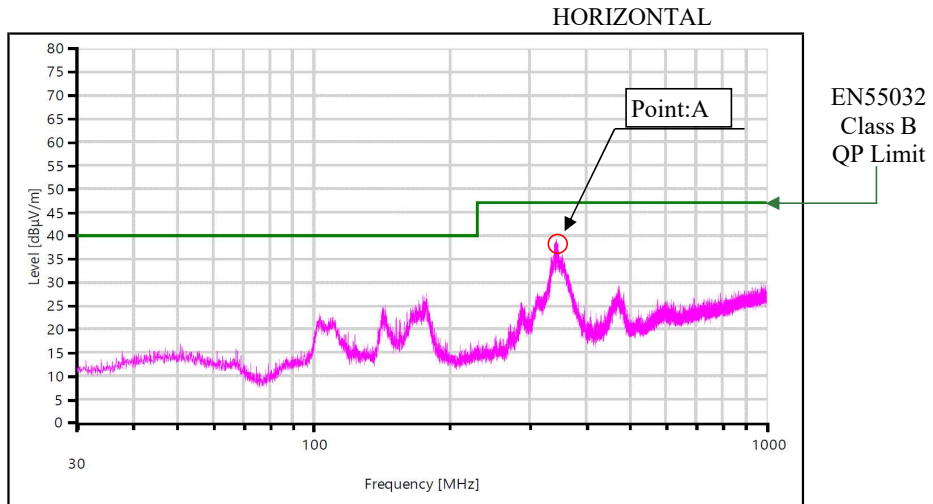
Limit of EN55011-B,FCC-Class B are same as its EN55032-B.

2-15. Electro-Magnetic Interference characteristics

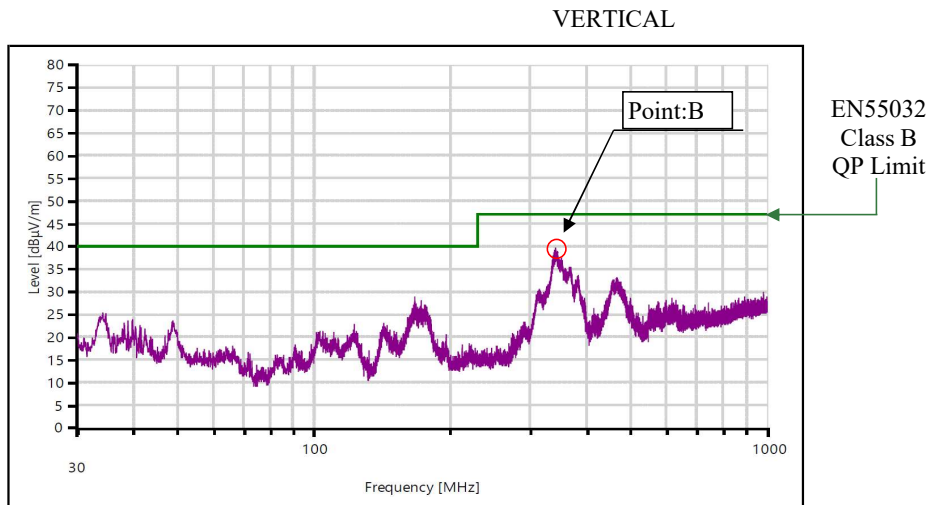
Conditions Vin : 115 VAC
 Iout : 66.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

12V



Point A (344MHz)		
Ref.	Data	Limit
QP	47.0	39.35



Point B (341MHz)		
Ref.	Data	Limit
QP	47.0	39.71

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

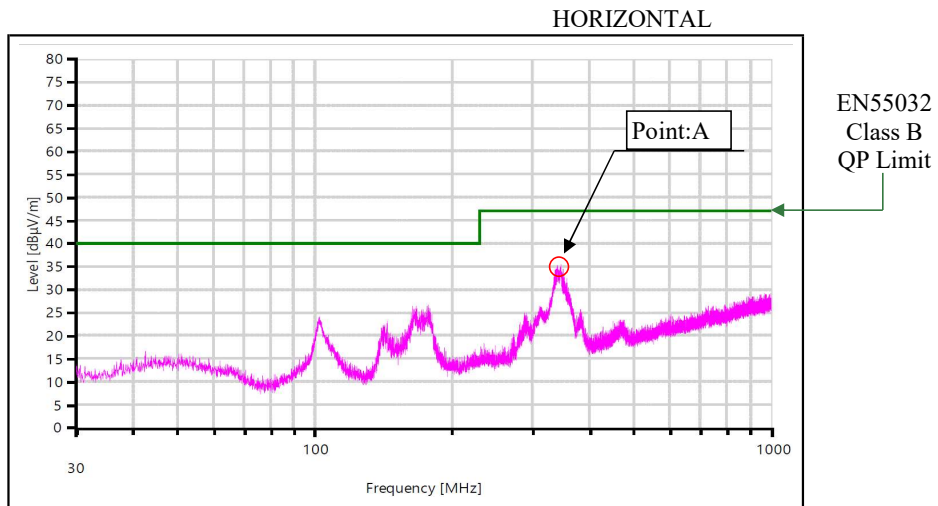
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

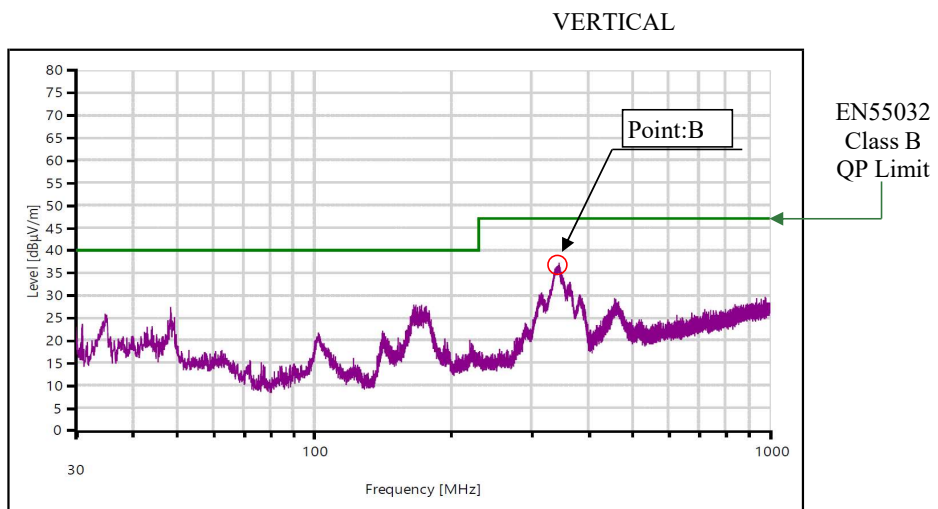
Conditions Vin : 230 VAC
 Iout : 66.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

12V



Point A (344MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	35.0



Point B (354MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	37.1

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

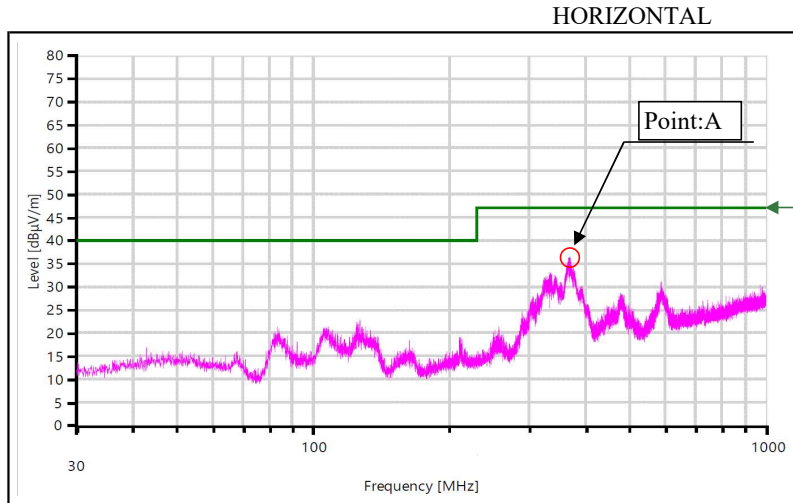
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

Conditions Vin : 115 VAC
 Iout : 41.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

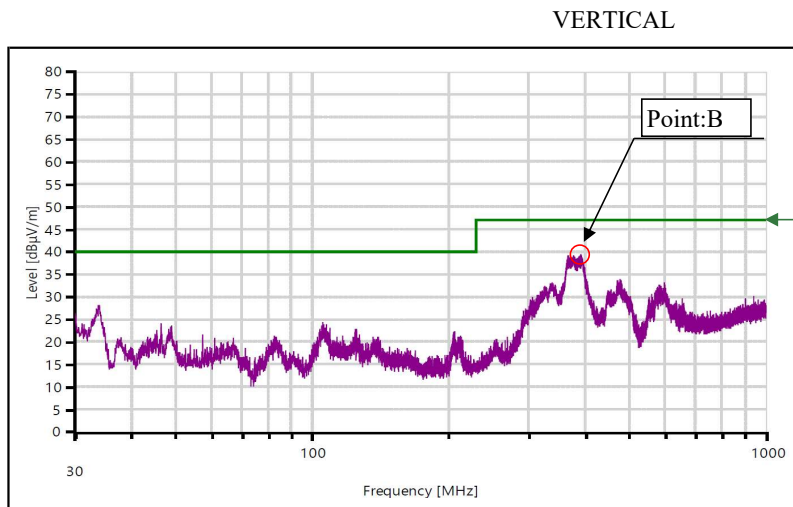
Radiated Emission

24V



EN55032
 Class B
 QP Limit

Point A (369MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	36.5



EN55032
 Class B
 QP Limit

Point B (391MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	39.6

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

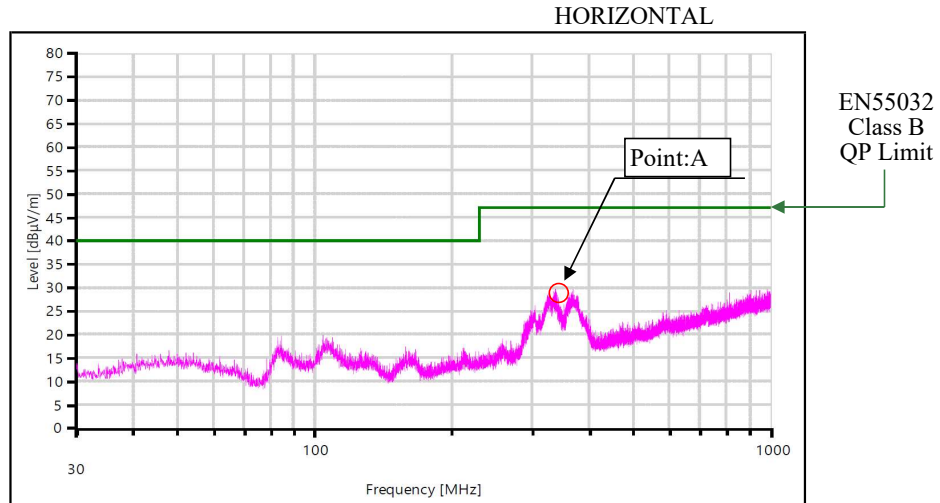
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

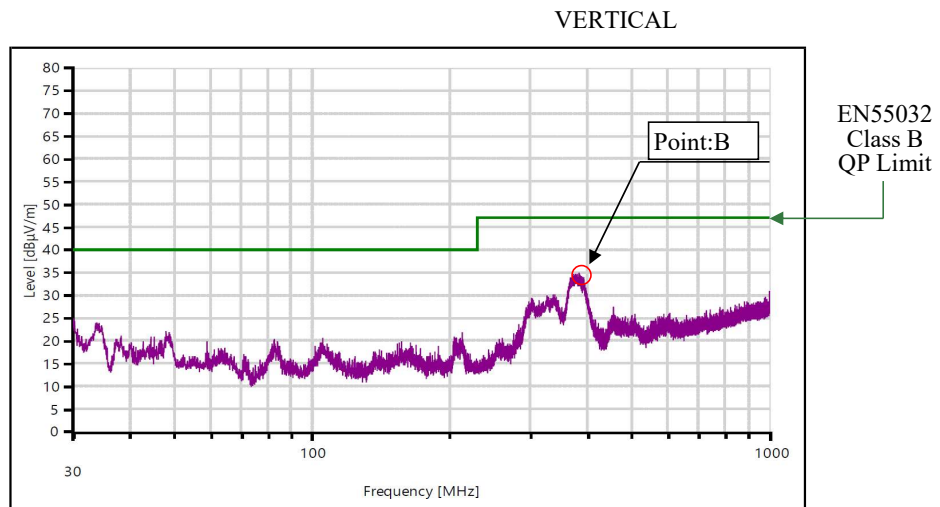
Conditions Vin : 230 VAC
 Iout : 41.7 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

24V



Point A (344MHz)		
Ref.	Limit	Measure
Data	(dBµV)	(dBµV)
QP	47.0	29.8



Point B (384MHz)		
Ref.	Limit	Measure
Data	(dBµV)	(dBµV)
QP	47.0	35.1

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

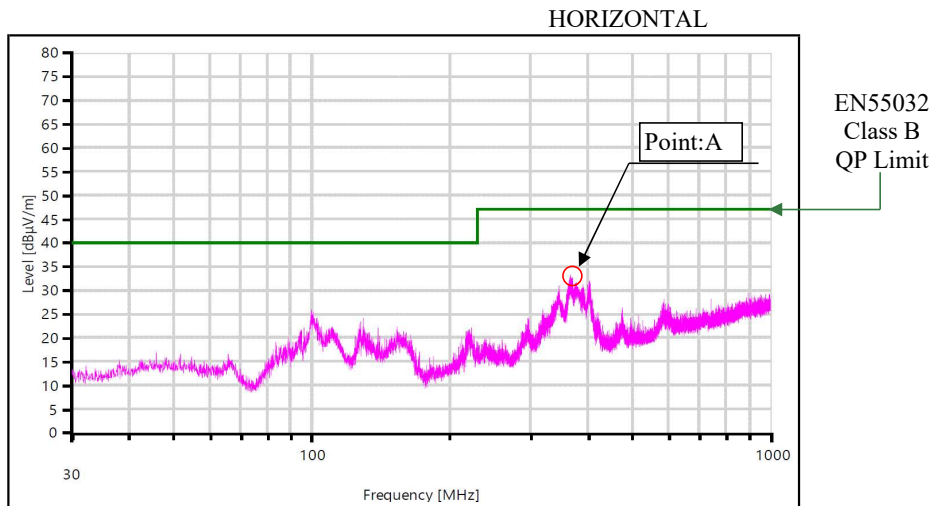
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

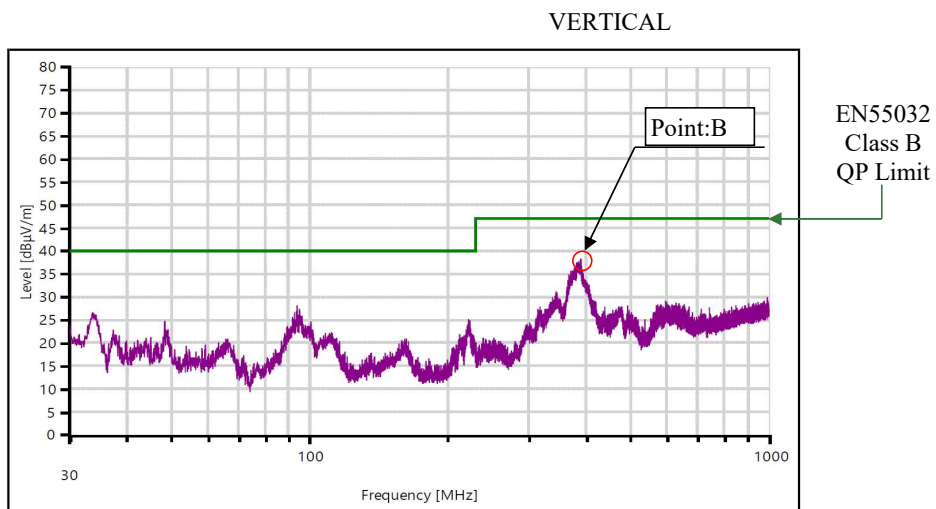
Conditions Vin : 115 VAC
 Iout : 27.8 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

36V



Point A (367MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	33.1



Point B (390MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	38.3

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

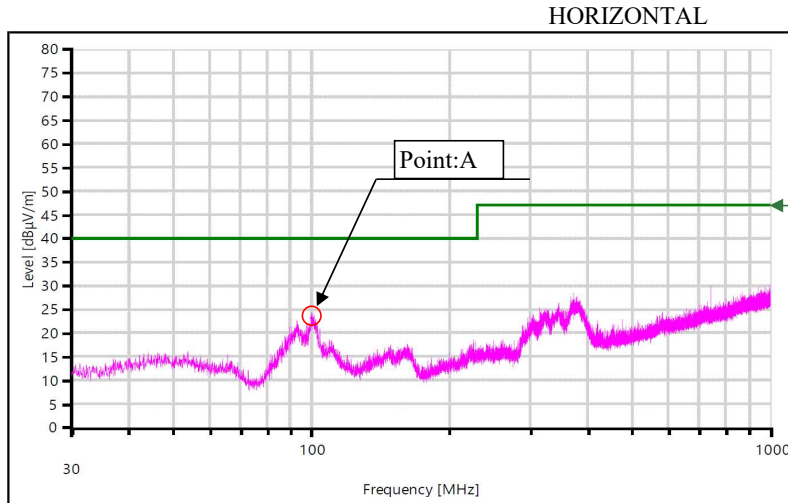
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

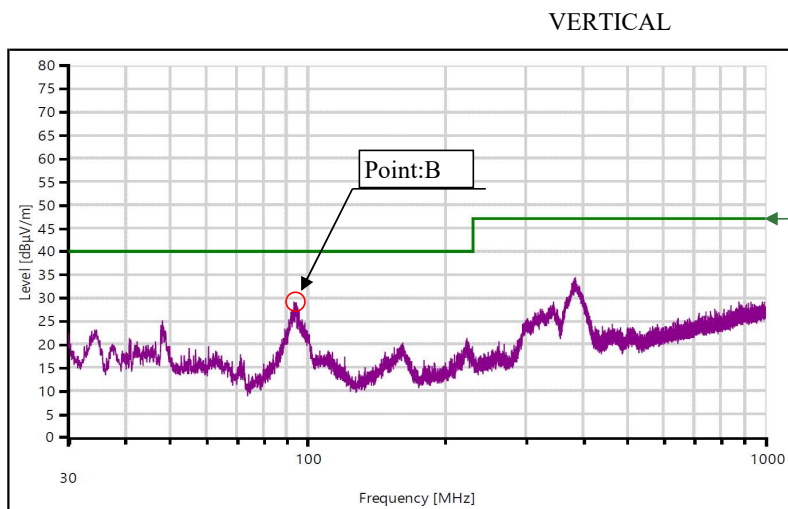
Conditions Vin : 230 VAC
 Iout : 27.8 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

36V



Point A (100MHz)		
Ref. Data	Limit (dBuV)	Measure (dBuV)
QP	40.0	24.4



Point B (93MHz)		
Ref. Data	Limit (dBuV)	Measure (dBuV)
QP	40.0	29.3

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

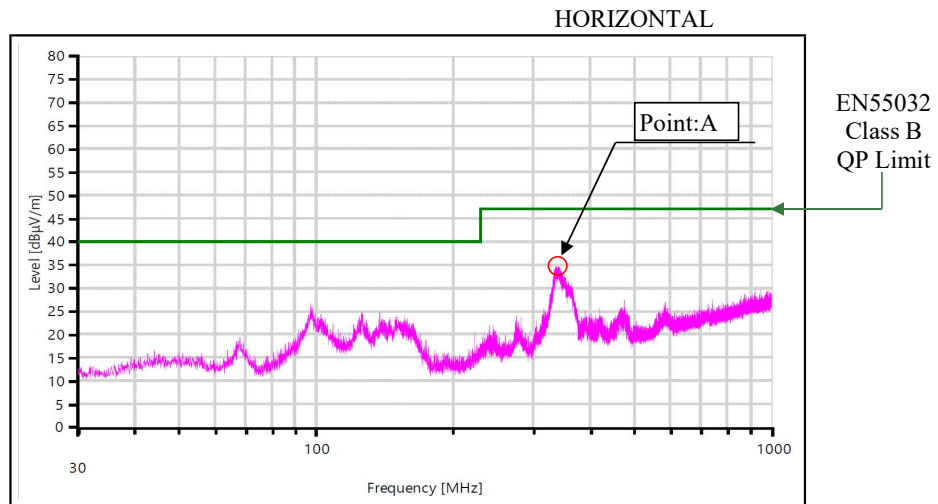
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

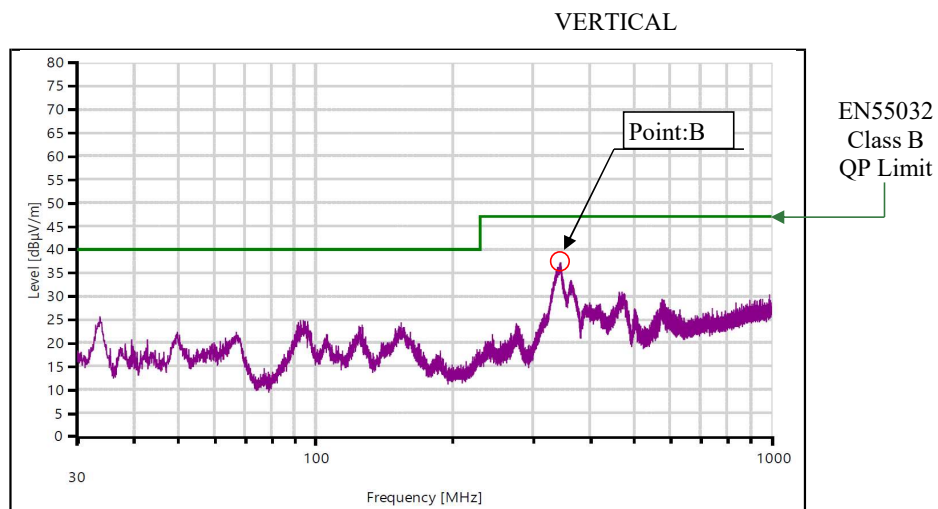
Conditions Vin : 115 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

48V



Point A (337MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	35.4



Point B (346MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	37.3

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

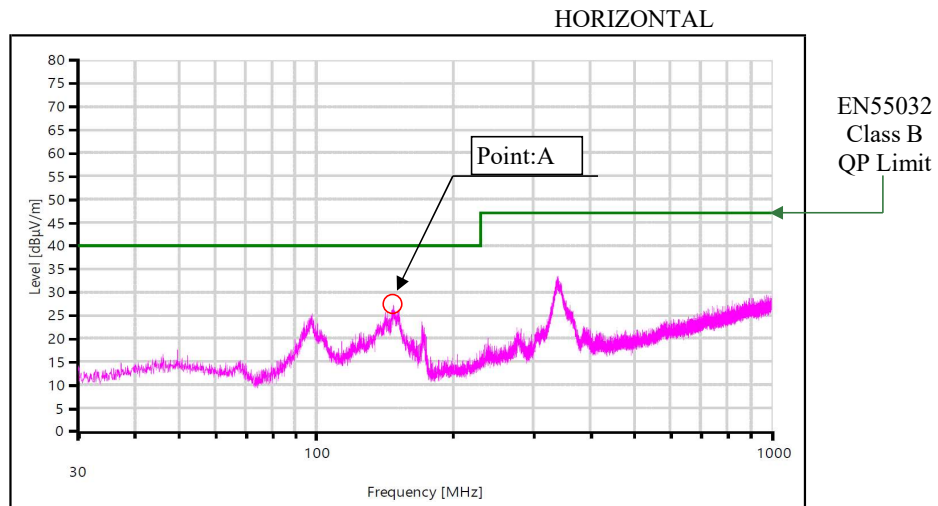
Indication is peak values.

2-15. Electro-Magnetic Interference characteristics

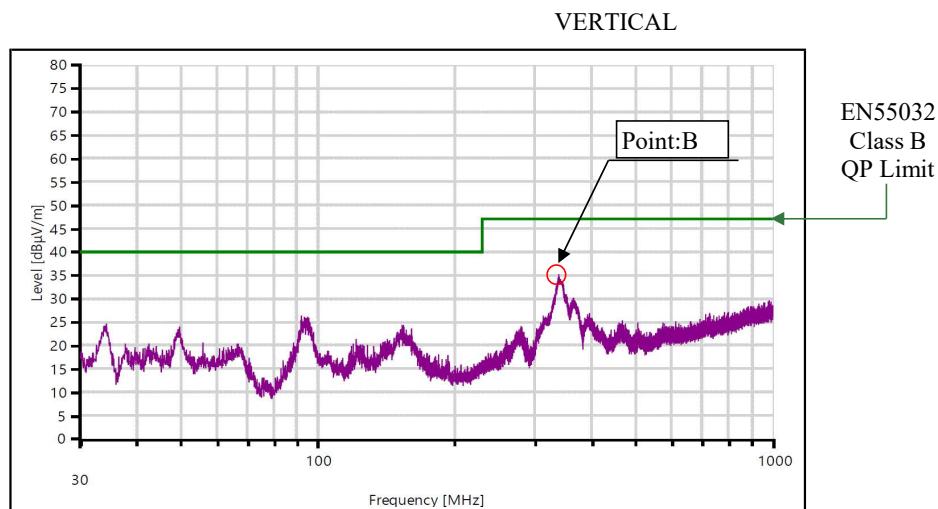
Conditions Vin : 230 VAC
 Iout : 20.9 A (100%)
 Istb : 100 %
 Ta : 25 °C

Radiated Emission

48V



Point A (148MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	40.0	27.2



Point B (339MHz)		
Ref. Data	Limit (dBµV)	Measure (dBµV)
QP	47.0	35.1

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

Indication is peak values.

2-16.Audible Noise of FAN

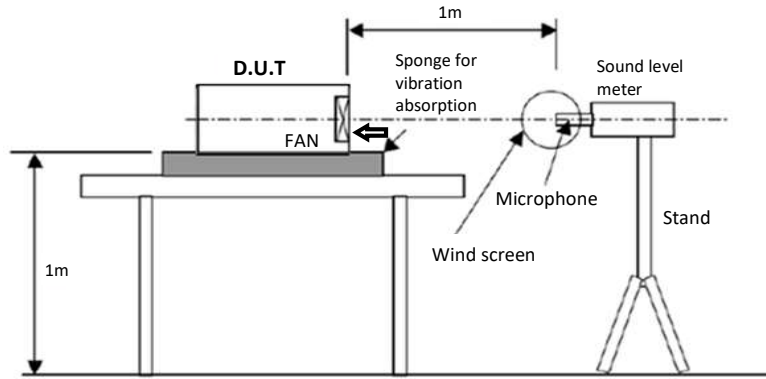
Test condition: Background noise: 23 [dB(A)]
 Test duration: 60 [s]
 Vin: 100VAC @ 60Hz ————
 230VAC @ 50Hz - - - - -
 Iout: 100% (41.7A)
 Istb: 100% (2A)
 Ta: 25°C

Test equipment :

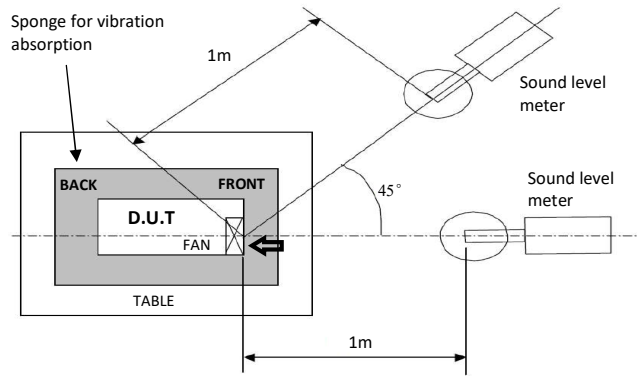
Sound Calibrator: Type 4231 (B&K)

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

Test Method :



Basic setting of sound measurements



Position of a sound meter intake surface (air inlet)

Audible Noise Curve of FAN:

24V

