

SPECIFICATION
FOR
M/N: MPM-K459-C

300W MEDICAL POWER SUPPLY WITH
SAFETY CLASS I

Revision History

Version	Date	Change Items
Rev. 01	Sep.02.2020	Established.
Rev. 02	May. 27. 2022	Changed "IP to Ground" and "OP to Ground" to 1800VAC.



FEATURES

- ✓ 300W convection cooling with cover.
- ✓ Peak Load 600W.
- ✓ Safety Class I.
- ✓ Design for BF application.
- ✓ High efficiency up to 94%.
- ✓ Optional PG / PF signal.
- ✓ 5,000m operation altitude.



Models & Ratings

Model Number	Wattage (Rated)	Output Voltage		Min. Current	Rated Current	Peak. Current
MPM-K459	300 W	V	+56 V	0 A	5.36 A	10.71 A

Total Output Power: Rated. 300W convection cooled. Please refer to page 6 output for the detail notes & conditions.

600W peak load with input 100VAC 10sec (Note 2).

Note:

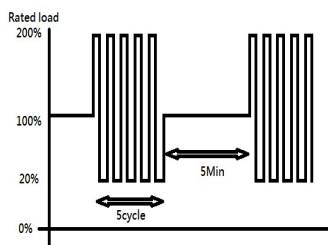
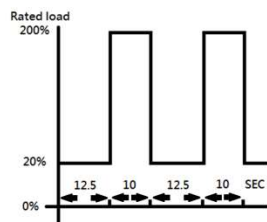
1. Initial Setting Accuracy is at Input 115VAC and all output at 60% rated load.

2. Peak load derating curve:

600W peak load with input 100VAC-264VAC 10sec

500W peak load with input 90VAC 10sec

460W peak load with input 85VAC 10sec



Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	85	115 / 230	264	Vac	Universal input range.
Input Frequency	47	50 / 60	63	HZ	
Efficiency		94		%	At input 230Vac, rated load, 1.0 hr. warm up.
Operation Temperature	-30		+50	°C	
Weight		530		g	
Dimensions	159.9(L) x 112.6(W) x 46.2 (H) mm, Tolerance +/- 0.5mm.				
EMC	EN 55011, EN 60601-1-2, EN 61000-3-2, EN 61000-3-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11				
Safety Approvals (Designed to meet)	EN 60601-1: 2006+A11+A1+A12, IEC 60601-1: 2005+CORR. 1: 2006+CORR. 2: 2007+A1: 2012, ANSI/AAMI ES60601-1, CAN/CSA-C22. 2 No. 60601-1, EN 60601-1: 2006+A11+A1+A12 MDD Report				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage - Operating	85	115 / 230	264	Vac	Universal input range.
Input Voltage – Fault Condition			280	Vac	5 seconds max.
Input Frequency	47	50 / 60	63	HZ	AC input.
Power Factor		0.95 / 0.88			115Vac/230Vac at rated load.
Input Current		6.3 / 2.5		A	Nominal AC Input Voltage (115Vac/230Vac), rated load.
Inrush Current			30 / 60	A	Nominal AC Input Voltage (115Vac/230Vac), one cycle at 25°C cold start.
Input Protection	Dual non-user serviceable internally located AC input line fuse. Fuse : T6.3A / 250Vac * 2pcs				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		56 ^(V1)		Vdc	
	11	12.4 ^(V Fan)	13.4		
Output Current		5.36 ^(V1)		A	
		0.25 ^(V Fan)			
Initial Set Accuracy (Note 1)		±1		%	
Minimum Load		0		A	
Start Up Delay		1		Sec.	Time required for initial output voltage stabilization. Nominal AC Input Voltage (115VAC/230VAC), rated load at 25°C.
Hold Up Time		20(300w)		mS	Nominal AC Input Voltage (115VAC/230VAC), rated load.
Line Regulation		±1		%	Measured at rated load with ±10% changing in input voltage.
Load Regulation		±1		%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).
Ripple & Noise (Note 2)		240(V1)		mV	Rated load, 20MHz bandwidth.
Over Voltage Protection	104	110	130	%	Latch-off mode.
Short Protection		Short Circuit		%	Auto-recovery mode.

Note:

1. Initial setting accuracy is adjusted at input 115VAC and output at 60% rated load.
2. Measured by a 20MHz bandwidth limited oscilloscope and each output is connected with a 10μF Electrolytic Capacitor and a 0.1μF Ceramic Capacitor.

General

Characteristic		Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency			94		%	At input 230VAC, rated load, 1 hr. warm up.
Isolation	IP to OP	4000			Vac	2 MOPP
	IP to Ground	1800			Vac	1 MOPP
	OP to Ground	1800			Vac	1 MOPP
Earth Leakage Current				300	μA	264Vac/60HZ
Patient Leakage Current				100	μA	264Vac/60HZ
Switching Frequency			67		KHZ	
MTBF			95573		hrs.	MIL-HDBK-217F at 25°C
Power Good Signal		100		500	mS	When power is turned on, the power good signal will go high after the output voltage are within regulation limit. Only for -SB model.
Power Fail Signal		1			mS	

Environmental

Characteristic		Minimum	Typical	Maximum	Units	Notes & Conditions
Low temperature start up		-30			°C	Some specification parameters maybe exceeded until after 20 minutes warm up period. (Note 1)
Operating Temperature		-30	+25	+50	°C	
Storage Temperature		-40		+85	°C	
Relative Humidity		5		95	%RH	Non-condensing.
Operating Altitude			5000		m	
Vibration			0.26		G	Frequency Type: Sweep Frequency Frequency Range: 10~55 Hz Displacement: 1.0mm Sweep Rate: 60 minute / cycle Number of cycle: 1 cycle / axis Direction: X ,Y and Z axis

Note:

1. To start up at low temperature, when the $V_{IP} < 100VAC$, please set the rated load @ 80% for maximum; when $V_{IP} \geq 100VAC$, there will be no specific limitation on rated load setting.

EMC: Emissions

Phenomenon	Standard	Class	Notes & Conditions
Conducted	EN 55011 / CISPR 11 & FCC Part 18	B	
Radiated	EN 55011 / CISPR 11 & FCC Part 18	B	
Harmonic Current	EN 61000-3-2	D	
Voltage Flicker	EN 61000-3-3		

- Note:
- Above specification is applied with output equal or below 300W. For higher output power, please re-confirm with us.
 - Above specification is based on the test conditions of EN 55011 / CISPR 11 & FCC Part 18. If there is any question when the power supply is applied to the system, please contact us for assistance.

EMC: Immunity

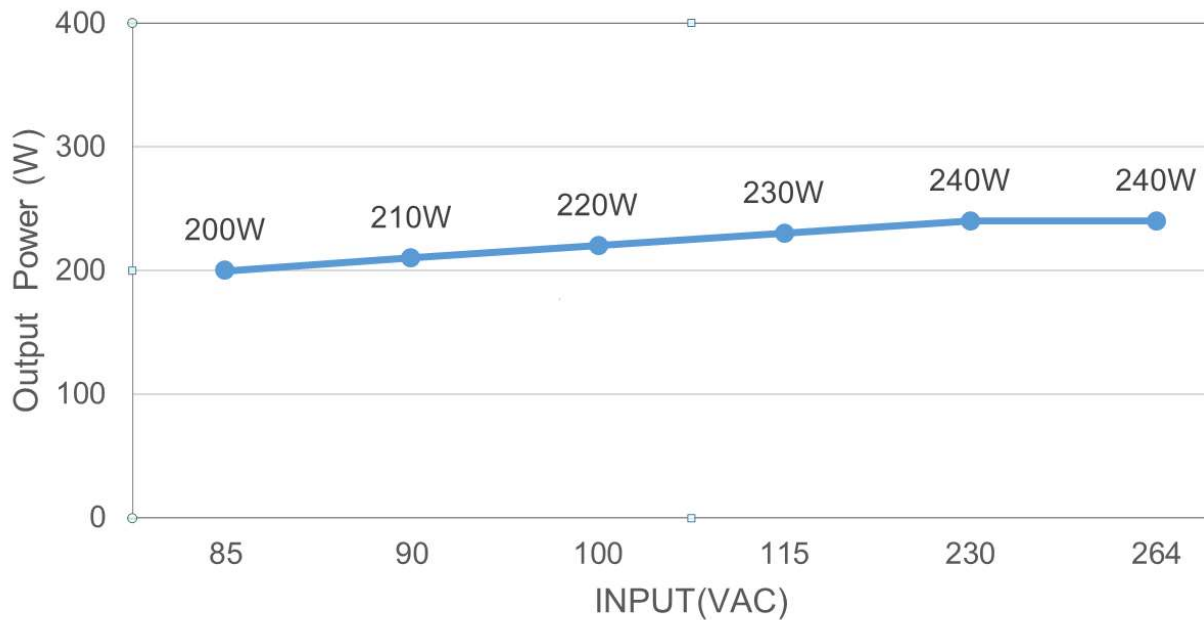
Phenomenon	Standard	Criteria	Notes & Conditions
Medical Device EMC	IEC 60601-1-2: 2014	As below	Edition 4.0
ESD	IEC 61000-4-2	A	±15KV air discharge, ±8KV contact discharge
Radiated	IEC 61000-4-3	A	10V/m
EFT	IEC 61000-4-4	A	±2KV Line & PE at 100KHz
Surges	IEC 61000-4-5	A	L-N:±1KV, L/N-PE:±2KV
Conducted	IEC 61000-4-6	A	10V
Power Magnetic	IEC 61000-4-8	A	30A/m
Dips and Interruptions	IEC 61000-4-11	A A A B	DIP: 100%, 0.5 cycles DIP: 100%, 1 cycles DIP: 30%, 25 cycle ^(Note2) DIP: 100%, 5 Sec

- Note:
- Above specification is applied with output equal or below 300W. For higher output power, please re-confirm with us.
 - The test result of input 240Vac / 100Vac is criteria A / B.

Safety Approvals

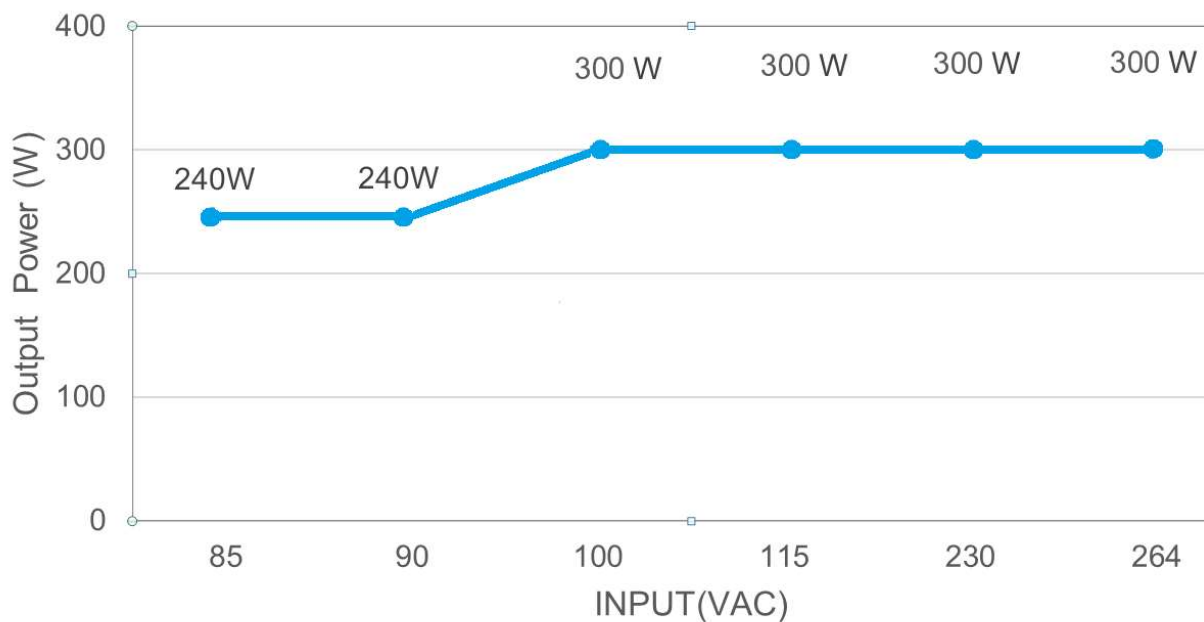
Safety Agency	Safety Standard	Notes & Conditions
TUV	EN 60601-1: 2006+A11+A1+A12	Designed to meet (Medical 3.1 rd). MDD Report
CB	IEC 60601-1: 2005+CORR. 1: 2006+CORR. 2: 2007+A1: 2012	
UL/cUL	ANSI/AAMI ES60601-1, CAN/CSA-C22. 2 No. 60601-1	
CE	EN 60601-1: 2006+A11+A1+A12	

Derating curve



—●— NO FAN 50°C

With COVER only



—●— NO FAN 25°C

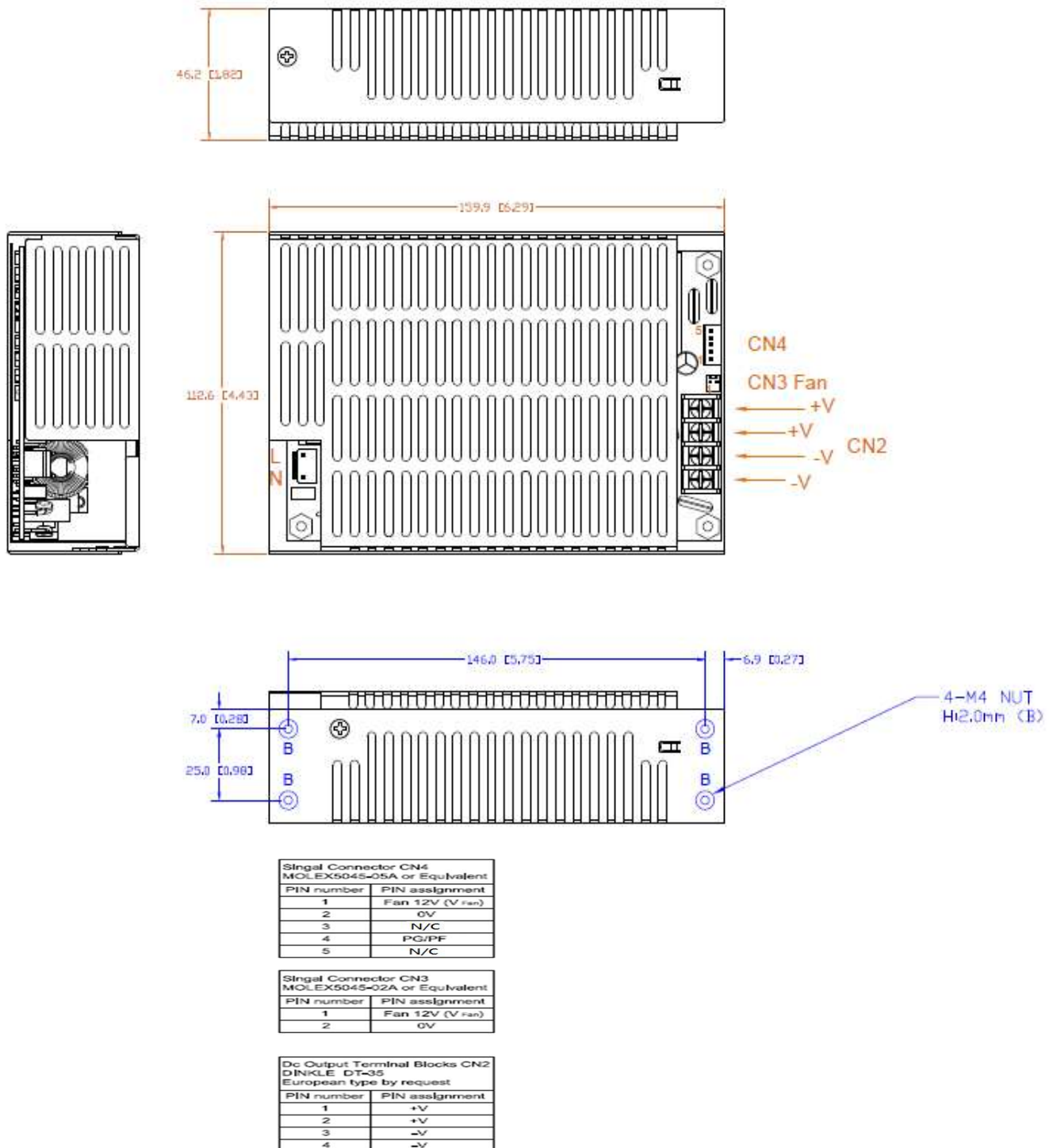
With COVER only

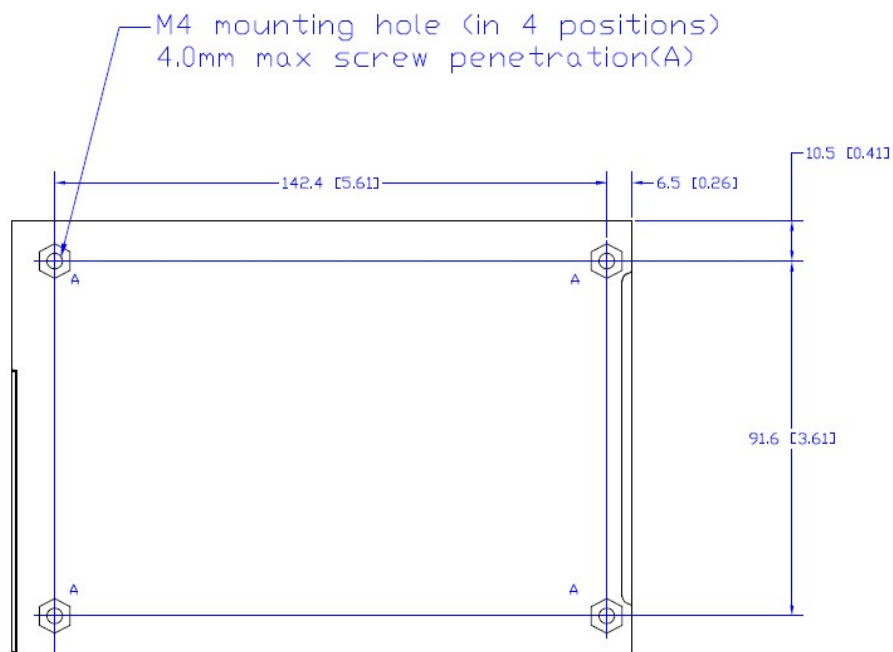
Mechanical Details

CLASS I

(MPM-K459-C)

All dimensions are in Inches [mm] Tolerance: +/- 0.5mm





Performance

(Input voltage: 100Vac)

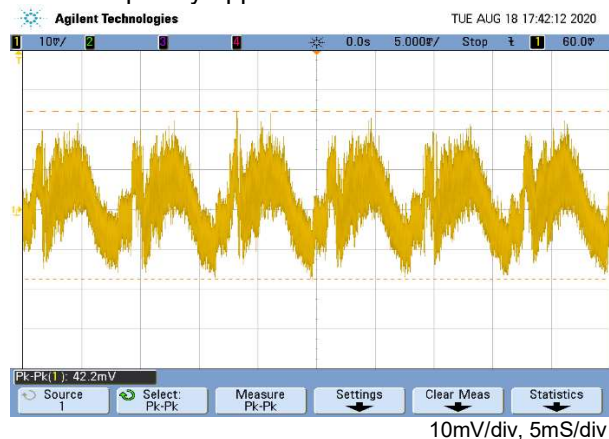
Switching frequency ripple

rated load



Line frequency ripple

rated load



Output turn-on

rated load



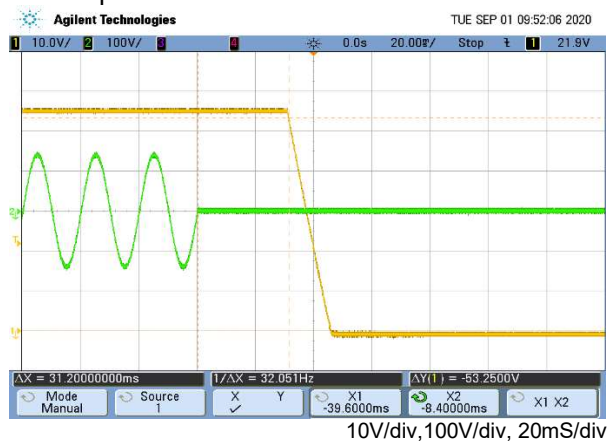
Output turn-off

rated load



Hold-up time

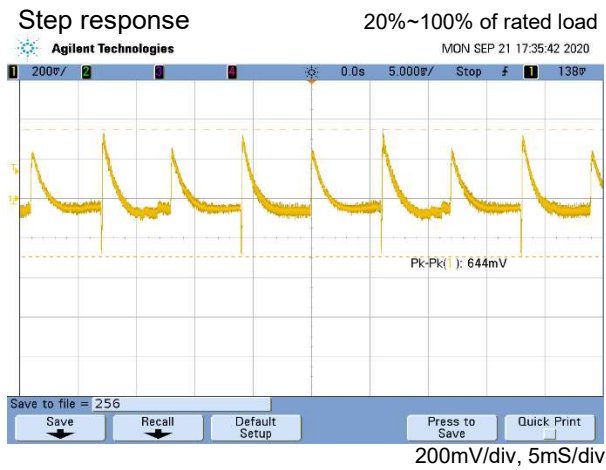
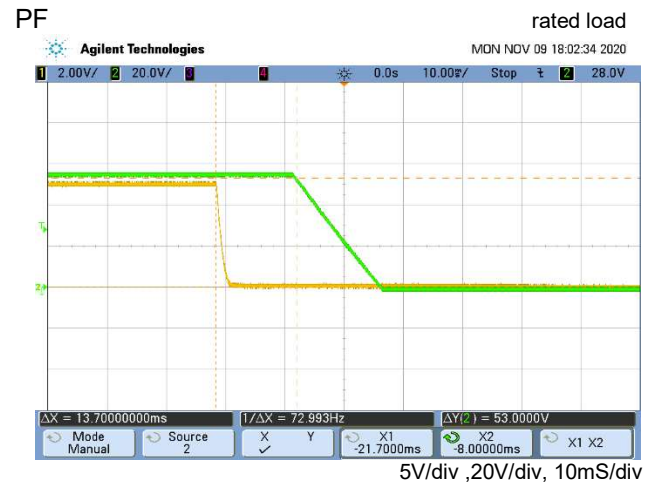
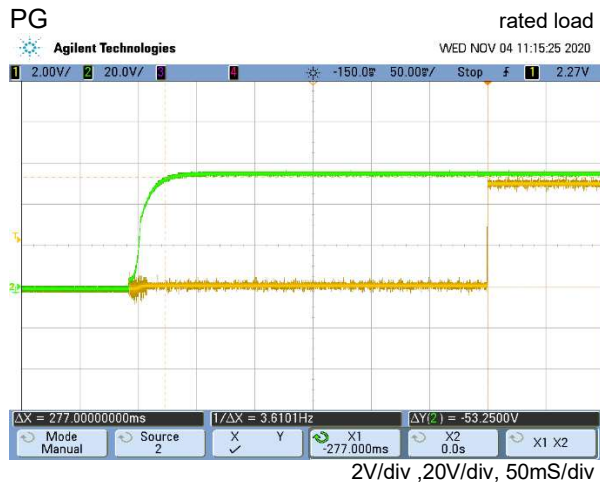
rated load



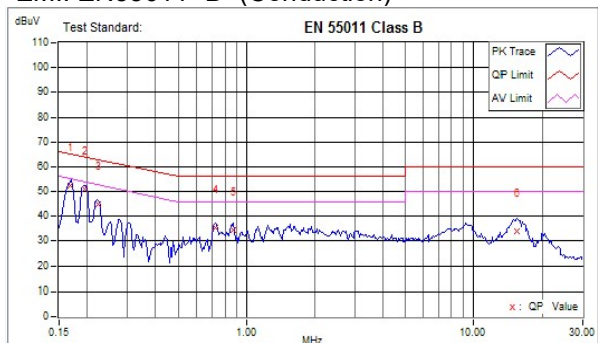
OVP(264V)

60% of rated load



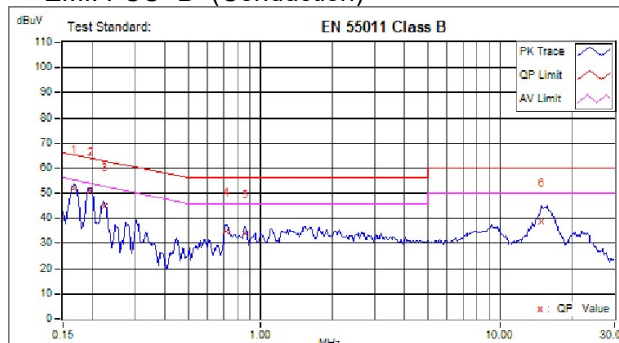


EMI: EN55011 "B" (Conduction)



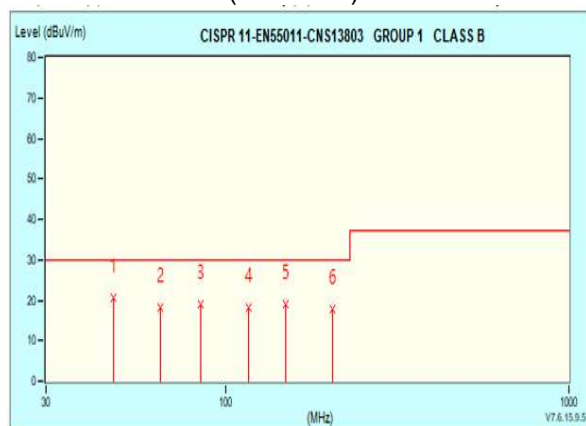
230Vac/rated load

EMI: FCC "B" (Conduction)



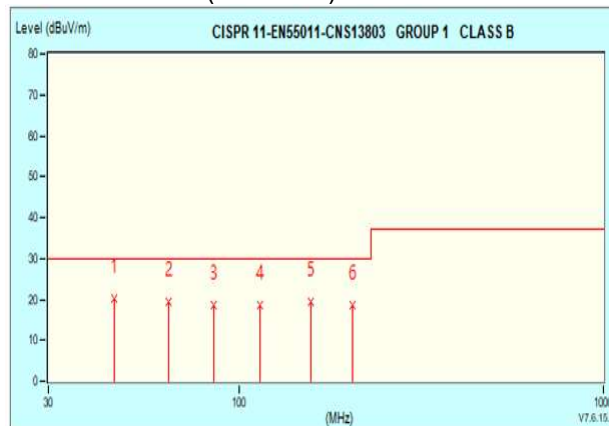
110Vac/rated load

EMI: EN55011 "B" (Radiation)



230Vac/rated load

EMI: FCC "B" (Radiation)



110Vac/rated load