



Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Aleph Objects Inc	Project Number:	B40815
Customer Representative:	Seth Sinnema	Test Area:	GP 2
Model:	KT-PR0016	S/N:	KT-PR0016-6616
Standard Referenced:	EN55024: 2010	Date:	August 19, 2014
Temperature:	24.2°C	Humidity:	58%
Input Voltage:	230VAC 50Hz	Pressure:	835mb
Configuration of Unit:	Printing test gcode file off SD card		
Test Engineer:	Mark Novak		

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Voltage (kV)	Polarity		L 1	L 2	L 3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
	+	-											
0.5	x		x			x		0	5	30	Differential Mode	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x		x				x	0	5	30	Common Mode Line	A	Pass
0.5		x	x				x	0	5	30		A	Pass
0.5	x		x				x	90	5	30		A	Pass
0.5		x	x				x	90	5	30		A	Pass
0.5	x		x				x	180	5	30		A	Pass
0.5		x	x				x	180	5	30		A	Pass
0.5	x		x				x	270	5	30		A	Pass
0.5		x	x				x	270	5	30		A	Pass
0.5	x					x	x	0	5	30	Common Mode Neutral	A	Pass
0.5		x				x	x	0	5	30		A	Pass
0.5	x					x	x	90	5	30		A	Pass
0.5		x				x	x	90	5	30		A	Pass
0.5	x					x	x	180	5	30		A	Pass
0.5		x				x	x	180	5	30		A	Pass



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	+	-											
0.5	x					x	x	270	5	30		A	Pass
0.5		x				x	x	270	5	30		A	Pass
1.0	x		x			x		0	5	60	Differential Mode	A	Pass
1.0		x	x			x		0	5	60		A	Pass
1.0	x		x			x		90	5	60		A	Pass
1.0		x	x			x		90	5	60		A	Pass
1.0	x		x			x		180	5	60		A	Pass
1.0		x	x			x		180	5	60		A	Pass
1.0	x		x			x		270	5	60		A	Pass
1.0		x	x			x		270	5	60		A	Pass
1.0	x		x			x		0	5	45	Common Mode Line	A	Pass
1.0		x	x			x		0	5	45		A	Pass
1.0	x		x			x		90	5	45		A	Pass
1.0		x	x			x		90	5	45		A	Pass
1.0	x		x			x		180	5	45		A	Pass
1.0		x	x			x		180	5	45		A	Pass
1.0	x		x			x		270	5	45		A	Pass
1.0		x	x			x		270	5	45		A	Pass
1.0	x					x	x	0	5	45	Common Mode Neutral	A	Pass
1.0		x				x	x	0	5	45		A	Pass
1.0	x					x	x	90	5	45		A	Pass



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	+	-											
1.0		x				x	x	90	5	45		A	Pass
1.0	x					x	x	180	5	45		A	Pass
1.0		x				x	x	180	5	45		A	Pass
1.0	x					x	x	270	5	45		A	Pass
1.0		x				x	x	270	5	45		A	Pass
2.0	x		x				x	0	5	60	Common Mode Line At every discharge the power supply sounded like there was arcing going on inside of it. This occurred at all phase angles, plus and minus voltage. Unit was not affected.	A	Pass
2.0		x	x				x	0	5	60		A	Pass
2.0	x		x				x	90	5	60		A	Pass
2.0		x	x				x	90	5	60		A	Pass
2.0	x		x				x	180	5	60		A	Pass
2.0		x	x				x	180	5	60		A	Pass
2.0	x		x				x	270	5	60	Power supply failed on second test	C	Fail
2.0		x	x				x	270	5	60			
2.0	x					x	x	0	5	60	Common Mode Neutral		
2.0		x				x	x	0	5	60			
2.0	x					x	x	90	5	60			
2.0		x				x	x	90	5	60			



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	+	-											
2.0	x					x	x	180	5	60			
2.0		x				x	x	180	5	60			
2.0	x					x	x	270	5	60			
2.0		x				x	x	270	5	60			



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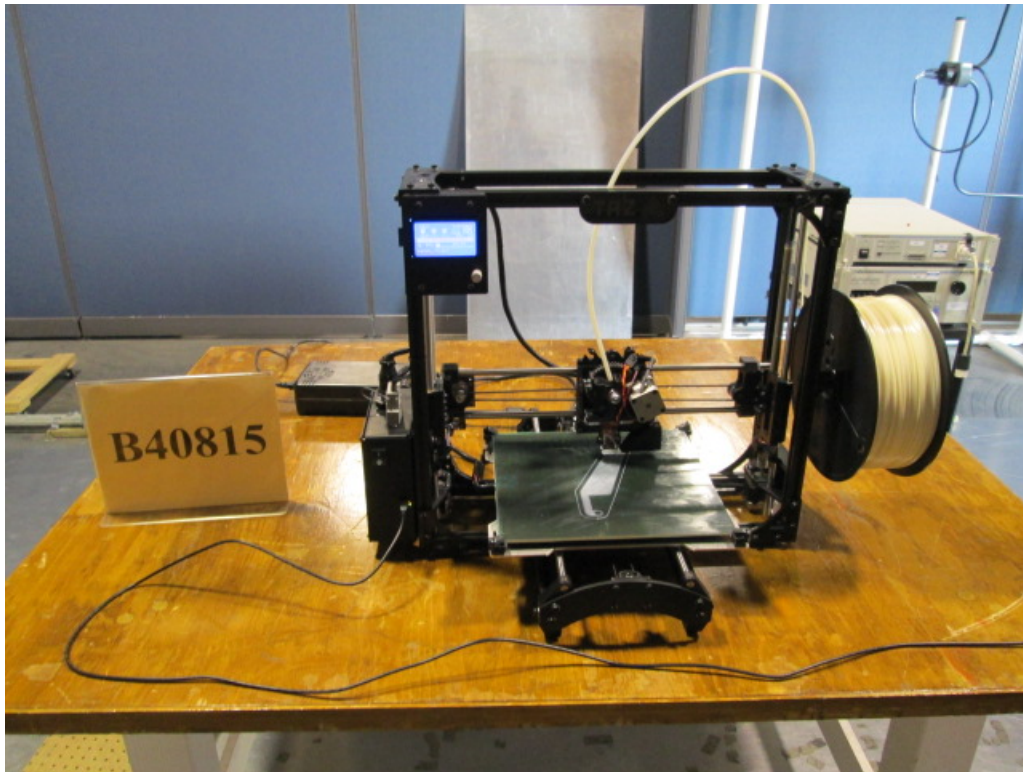


Figure D1. Surge Immunity Test Setup



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Figure D1. Surge Immunity Test Setup – AC Mains



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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1013	KeyTek	EMC Pro	0008347	Advanced EMC Immunity Tester	05/20/2014	05/20/2015
1184	KeyTek	CEWare32	NA	KeyTek EMCPro Control Software for EFT, Surge, H-F	NA	NA
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel	01/05/2014	01/05/2015
1536	Extech Instruments	445715	Z315811	Hygro-Thermometer	03/21/2014	03/21/2015
1550	California Instruments/A metek	1251P	1423A05346	AC Power Supply	NA	NA