

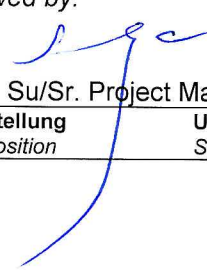


<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	11032689 001	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	114007694/ 114013741	Seite 1 von 36 Page 1 of 36
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	12061254/12066916	<b>Auftragsdatum:</b> <i>Order date:</i>	March 18, 2013	
<b>Auftraggeber:</b> <i>Client:</i>	Lee Yeong Industrial Co., Ltd. No. 2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan, R.O.C.			
<b>Prüfgegenstand:</b> <i>Test item:</i>	Electric Threading Machine			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	PT600 (AC 110-120V), PT600 (AC 220-240V)			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	TUV Rheinland - EMC CoC approval			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	EN 55014-1:2006+A1:2009+A2:2011 EN 55014-2:1997+A1:2001+A2:2008 EN 61000-3-2:2006+A1:2009+A2:2009 EN 61000-3-3:2008			
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	07.16.2013			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	A000017889			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	07.19.2013 – 09.27.2013			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Taichung Laboratory			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland Taiwan Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>		
 Oct. 28, 2013 Steven Wang/Sr. Project Manager		 Oct. 28, 2013 Shirley Su/Sr. Project Manager		
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>
<b>Sonstiges / Other:</b>				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut    2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
Legend:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
	1 = very good    2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)	F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				

v04

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## 1 Test Site

### 1.1 Testing Location

TÜV Rheinland Taiwan Ltd., (Taichung)

No. 9, Ln. 36, Sec. 3, Minsheng Rd., Daya District, Taichung City 428, Taiwan

### 1.2 Measurement Uncertainty

Testing Item	Frequency Range	Uncertainty
Conducted Emission	150kHz - 30MHz	2.3 dB
Disturbance Power	30MHz - 300MHz	2.8 dB

**Note:**

The uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $K=2$ .

## 2 Description of the Test Samples

### 2.1 General Description of Equipment

The EUTs are Electric Threading Machines with the type designation **PT600 (AC 110-120V)** and **PT600 (AC 220-240V)** intended for general use in household or light industry environment. It consists of a switch, PCB board and AC carbon brush motor. Both models are electrical identical but differ in input voltage and motor. PT600 (AC 220-240V) was chosen for complete testing as representative. Conducted Emission and Power Disturbance test was performed for PT600 (AC 110-120V).

## 2.2 Rating and Physical Characteristics

<b>Type Designation:</b>	<b>PT600 (AC 110-120V)</b>	<b>PT600 (AC 220-240V)</b>
<b>Rated Voltage:</b>	<b>AC 110-120V</b>	<b>AC 220-240V</b>
<b>Frequency:</b>	<b>50/60Hz</b>	<b>50/60Hz</b>
<b>Rated Power:</b>	<b>1100W</b>	<b>1100W</b>
<b>Protection Class:</b>	<b>II</b>	<b>II</b>

## 2.3 Sources of Interference

AC carbon brush motor: PT600 (AC 110-120V) and PT600 (AC 220-240V), manufactured by Lee Yeong Co.,

## 2.4 Noise Suppression Parts

PCB board:

X2-capacitor: XC1; 0.47 $\mu$ F/275V

Inductor: CH1 EV42-1; type; Choke-EV42-1, 61.5 $\mu$ H (for AC 110-120V only)

Inductor: CH1 EV42-2; type; T12.7x7.9x6.35-C, 150 $\mu$ H (for AC 220-240V only)

Inductor: L2; type; PK0507-152K, 1.5mH

Varistor: TNR1; 14D471K

## 2.5 Submitted Documents

- (1) Rating label
- (2) Circuit diagram and bill of material
- (3) PCB layout
- (4) User manual

## 3 Measurement Conditions

### 3.1 Modes of Operation

The subject equipments were tested in “ON- continues” mode with artificial hand or without artificial hand.

### 3.2 Additional Equipment

The EUTs were investigated as an independent unit without any additional accessory.

### 3.3 Test Setup

The test setup was realized on a 80-cm height during all tests as described herein.

### 3.4 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

For EMI/Conducted Emission Measurement/ Power Clamp Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibration Due Date
1	Test Receiver	R&S	ESCS30	100055	2014/05/22
2	LISN	R&S	ESH3-Z5	1000128	2014/05/22
3	Absorbing Clamp	R&S	MDS-21	100040	2014/05/22
4	Pulse Limiter	R&S	ESH3-Z2	100080	2014/05/17

For Harmonics/Flicker Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibration Due Date
1	Harmonics/Flickers Tester	Schaffner	Proflin 2100/CCN 1000-1	72334	2014/06/26

For EMS/ESD/EFT/Surge/Dip Testing

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibration Due Date
1	ESD/EFT/Surge/Dip Generator	EMC PARTNER	TRA3000 E-F-S-D-V	1215	2014/04/18
2	ESD Generator	Noiseken	ESS-B3011	ESS11Y2449	2014/06/21
3	ESD Gun	Noiseken	GT-30R	ESS11Y2469	2014/06/21

For EMS CS Testing

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibration Due Date
1	CS Test System	Schaffner	NSG2070-1-04	1079	2014/01/22
2	CDN-M2/M3	Schaffner	CDN M016	20815	2014/02/18

### 3.4.1 Calibration of Test and Measurement Instruments

Above listed equipment undergoes a regularly calibration. At the time of testing all the used equipment was within its period of calibration. The calibration documentation and dates are stored in the calibration record folder of the laboratory.

### 3.5 Abbreviations

<b>PASS</b> means 'complied with requirement'	<b>N/A</b> means 'not applicable'
<b>FAIL</b> means 'not complied'	<b>N.C.R.</b> means 'no calibration required'
<b>L.I.S.N.</b> means 'Line Impedance Stability Network '	<b>EUT</b> means 'equipment under test'

## 4 Test Results EMISSION

<b>Result:</b>	<b>PASS</b>
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### 4.1 Continuous Interference

#### 4.1.1 Conducted Emission (AC Mains)

Port: AC Mains  
 Basic Standard: EN 55014-1, clause 4.1.1  
 Frequency Range: 0.15 - 30 MHz  
 Limits: Mains Terminal of Tools, table 1

<b>Result:</b>	<b>PASS</b>
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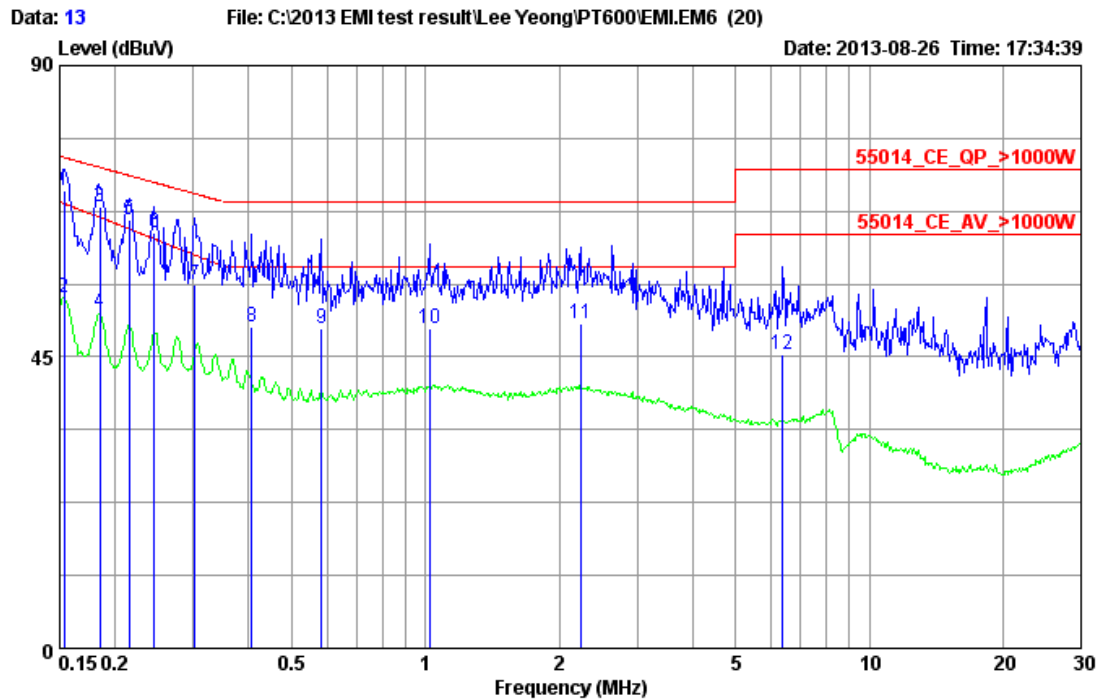
#### Test Setup

Date of Testing: 2013.08.22 – 2013.08.26  
 Model: PT600 (AC 110-120V), PT600 (AC 220-240V)  
 Input Voltage: AC 110V and AC 240V, 50Hz  
 Operational Mode: ON, see 3.1  
 Earthing: Not intended

**Table 2: Conducted Emission, AC Mains; 0.15 - 30 MHz**

#### Settings

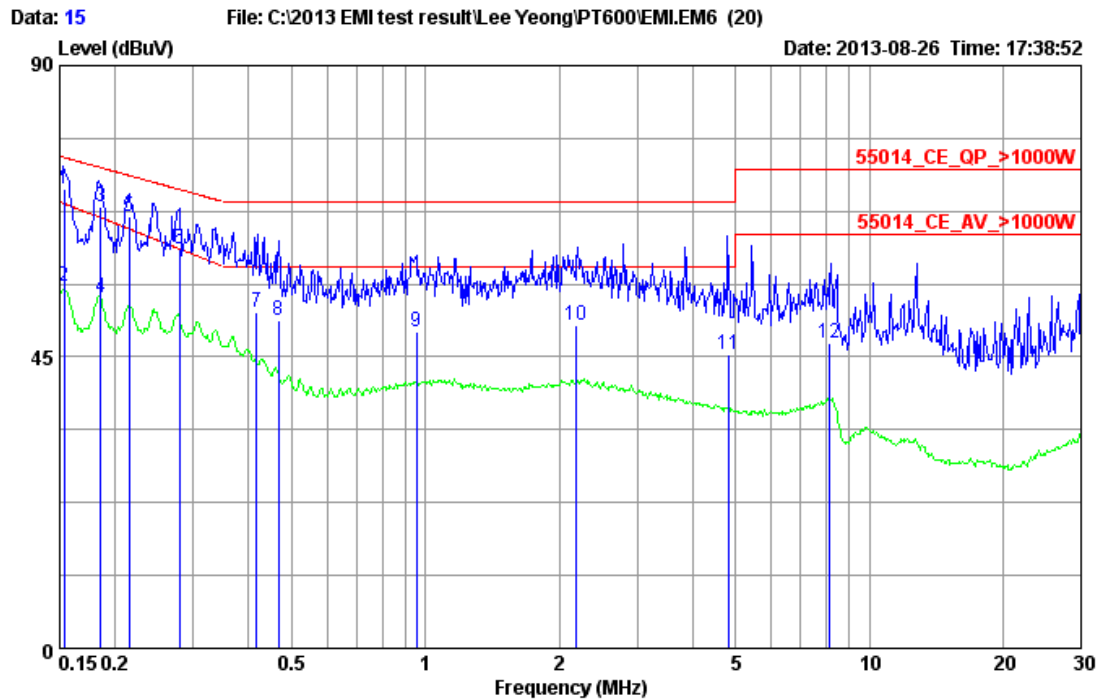
Frequency			Settings		
Start	Stop	Step Size	IF Bandwidth	Detector	Meas. Time
150kHz	30MHz	5kHz	9kHz	QP/AV	10ms/1s

**Figure 1: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 110-120V) with artificial hand (Line 1)**


Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - L LINE  
 EUT : Portable Threading Machine  
 MODEL : PT600 (110-120V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 110V/50Hz  
 Comment : with AFH

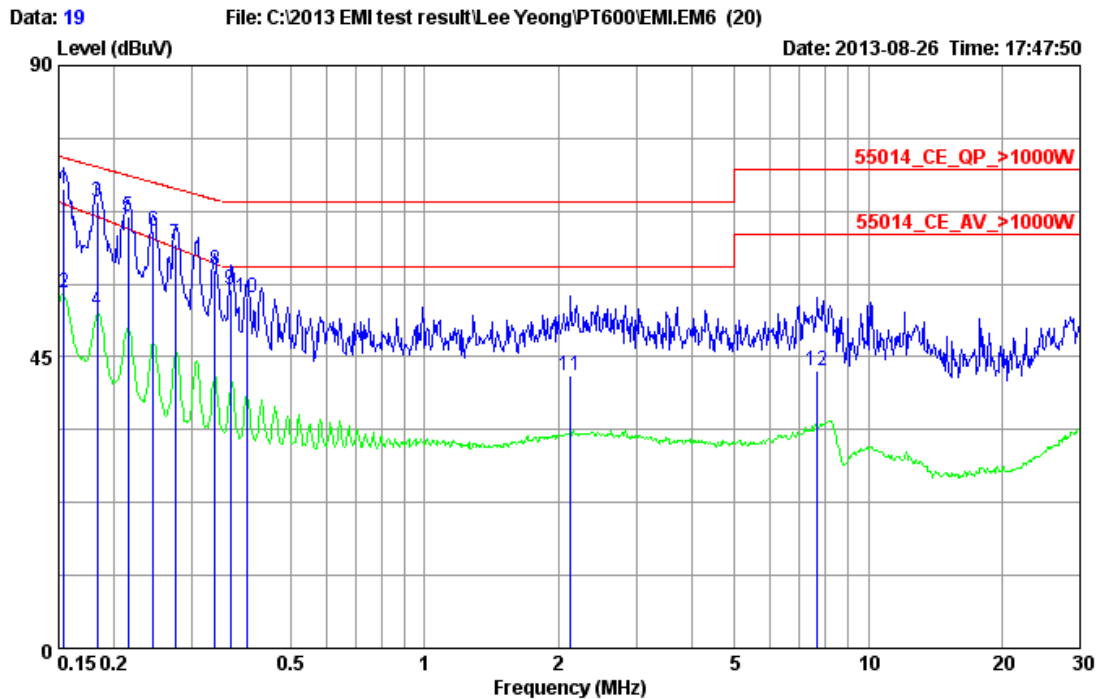
		Read		Limit	Over	
	Freq	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB	dBuV	dB	
1	q	0.153	70.57	0.11	70.68	75.82 -5.14 QP
2	a	0.153	54.16	0.11	54.27	68.75 -14.48 Average
3		0.184	68.17	0.11	68.28	74.29 -6.01 QP
4		0.184	51.71	0.11	51.82	66.56 -14.74 Average
5		0.215	66.16	0.11	66.27	73.02 -6.75 QP
6		0.246	64.09	0.11	64.20	71.93 -7.73 QP
7		0.302	56.16	0.12	56.28	70.22 -13.94 QP
8		0.406	49.43	0.12	49.55	69.00 -19.45 QP
9		0.582	49.33	0.12	49.45	69.00 -19.55 QP
10		1.027	49.15	0.13	49.28	69.00 -19.72 QP
11		2.237	50.04	0.17	50.21	69.00 -18.79 QP
12		6.386	45.04	0.22	45.26	74.00 -28.74 QP



**Figure 2: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 110-120V) with artificial hand (Line 2)**


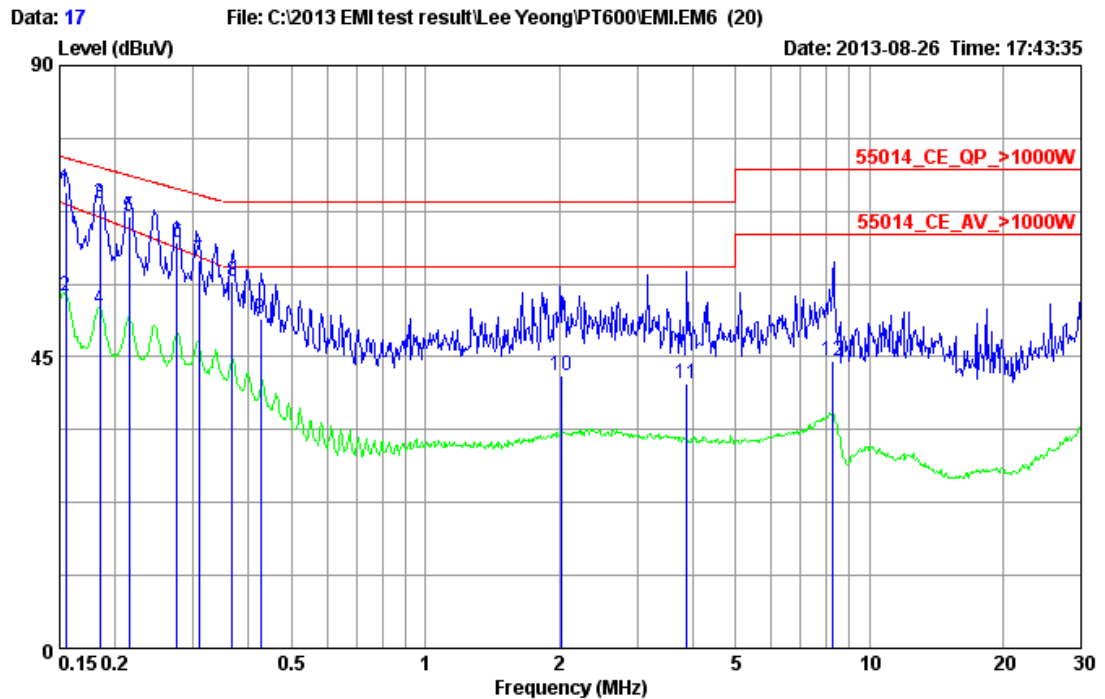
Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - N NEUTRAL  
 EUT : Portable Threading Machine  
 MODEL : PT600 (110-120V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 110V/50Hz  
 Comment : with AFH

		Read		Limit	Over			
	Freq	Level	Factor	Level	Line	Limit		
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	q	0.153	70.92	0.09	71.01	75.82	-4.81	QP
2		0.153	55.78	0.09	55.87	68.75	-12.88	Average
3		0.185	68.13	0.09	68.22	74.25	-6.03	QP
4	a	0.185	54.13	0.09	54.22	66.50	-12.28	Average
5		0.215	66.72	0.09	66.81	73.02	-6.21	QP
6		0.279	61.51	0.09	61.60	70.88	-9.28	QP
7		0.417	51.89	0.09	51.98	69.00	-17.02	QP
8		0.466	50.45	0.09	50.54	69.00	-18.46	QP
9		0.953	48.77	0.11	48.88	69.00	-20.12	QP
10		2.190	49.77	0.14	49.91	69.00	-19.09	QP
11		4.822	45.26	0.21	45.47	69.00	-23.53	QP
12		8.148	46.90	0.31	47.21	74.00	-26.79	QP

**Figure 3: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 110-120V) without artificial hand (Line 1)**


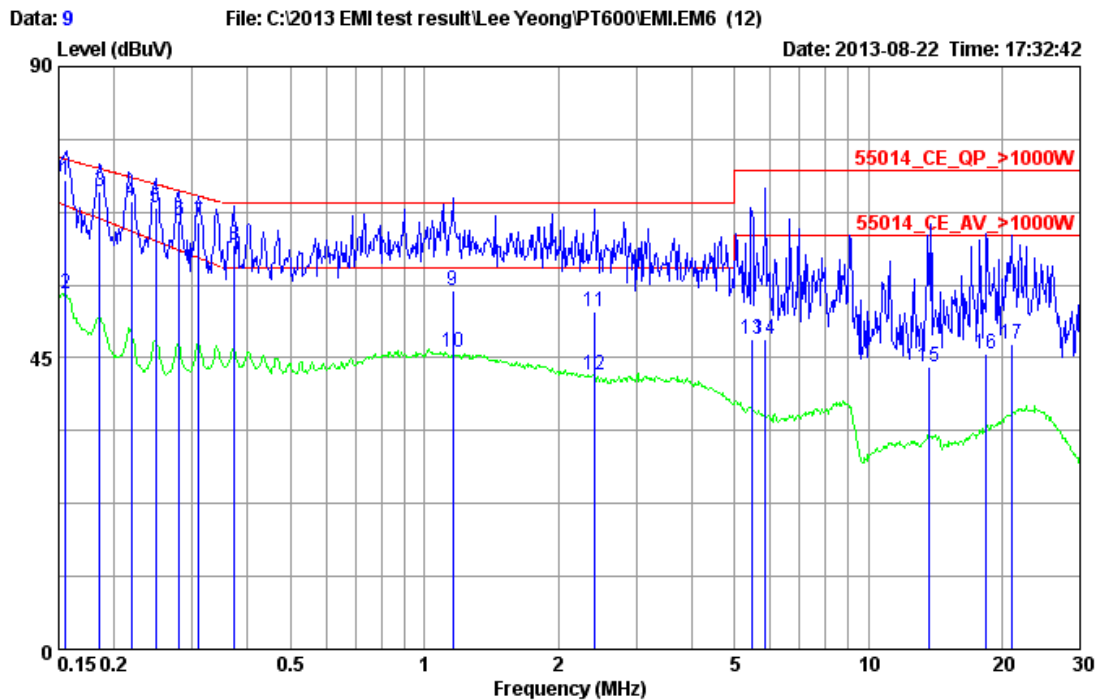
Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - L LINE  
 EUT : Portable Threading Machine  
 MODEL : PT600 (110-120V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 110V/50Hz  
 Comment : without AFH

		Read		Limit	Over	
	Freq	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB	dBuV	dB	
1	q	0.154	70.87	0.11	70.98	75.78 -4.80 QP
2	a	0.154	54.69	0.11	54.80	68.69 -13.89 Average
3		0.183	68.72	0.11	68.83	74.34 -5.51 QP
4		0.183	51.93	0.11	52.04	66.62 -14.58 Average
5		0.215	66.60	0.11	66.71	73.02 -6.31 QP
6		0.246	64.37	0.11	64.48	71.93 -7.45 QP
7		0.274	62.28	0.11	62.39	71.01 -8.62 QP
8		0.337	58.21	0.12	58.33	69.30 -10.97 QP
9		0.365	55.16	0.12	55.28	69.00 -13.72 QP
10		0.398	53.91	0.12	54.03	69.00 -14.97 QP
11		2.133	41.99	0.16	42.15	69.00 -26.85 QP
12		7.687	42.72	0.22	42.94	74.00 -31.06 QP

**Figure 4: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 110-120V) without artificial hand (Line 2)**


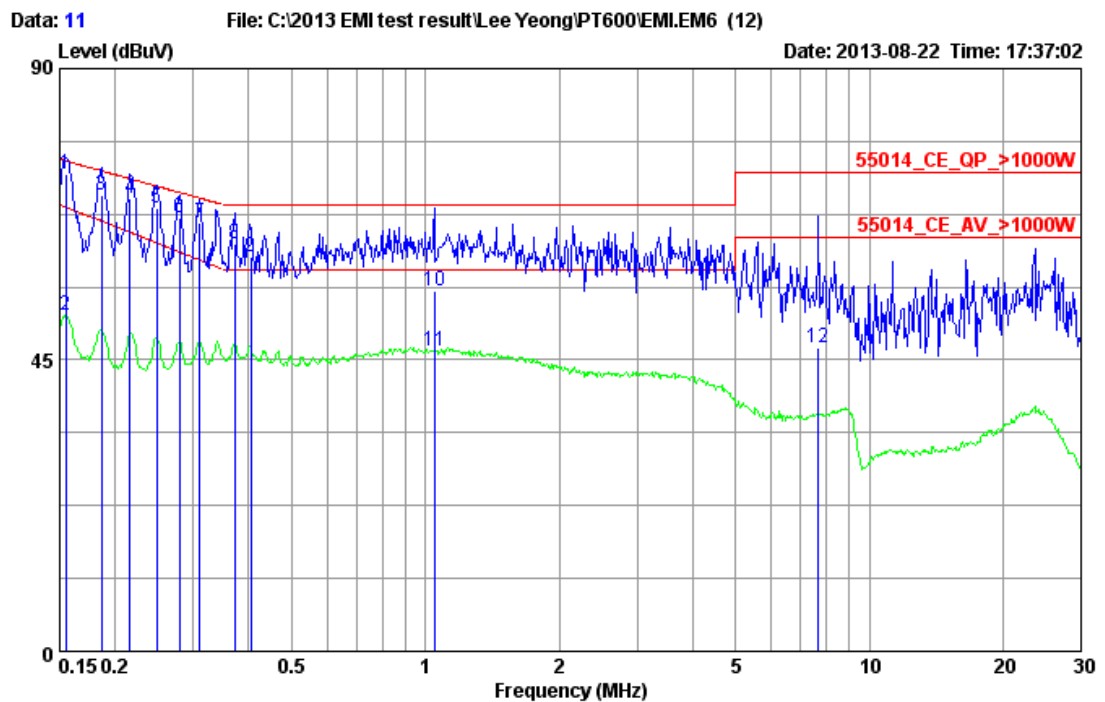
Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - N NEUTRAL  
 EUT : Portable Threading Machine  
 MODEL : PT600 (110-120V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 110V/50Hz  
 Comment : without AFH

		Read		Limit	Over			
	Freq	Level	Factor	Level	Line	Limit		
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	q	0.155	70.43	0.09	70.52	75.74	-5.22	QP
2		0.155	54.32	0.09	54.41	68.62	-14.21	Average
3		0.184	68.52	0.09	68.61	74.29	-5.68	QP
4	a	0.184	52.28	0.09	52.37	66.56	-14.19	Average
5		0.215	66.56	0.09	66.65	73.02	-6.37	QP
6		0.276	62.62	0.09	62.71	70.97	-8.26	QP
7		0.308	59.93	0.09	60.02	70.05	-10.03	QP
8		0.367	56.58	0.09	56.67	69.00	-12.33	QP
9		0.426	50.87	0.09	50.96	69.00	-18.04	QP
10		2.023	42.03	0.13	42.16	69.00	-26.84	QP
11		3.881	40.77	0.18	40.95	69.00	-28.05	QP
12		8.279	44.10	0.31	44.41	74.00	-29.59	QP

**Figure 5: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 220-240V) with artificial hand (Line 1)**


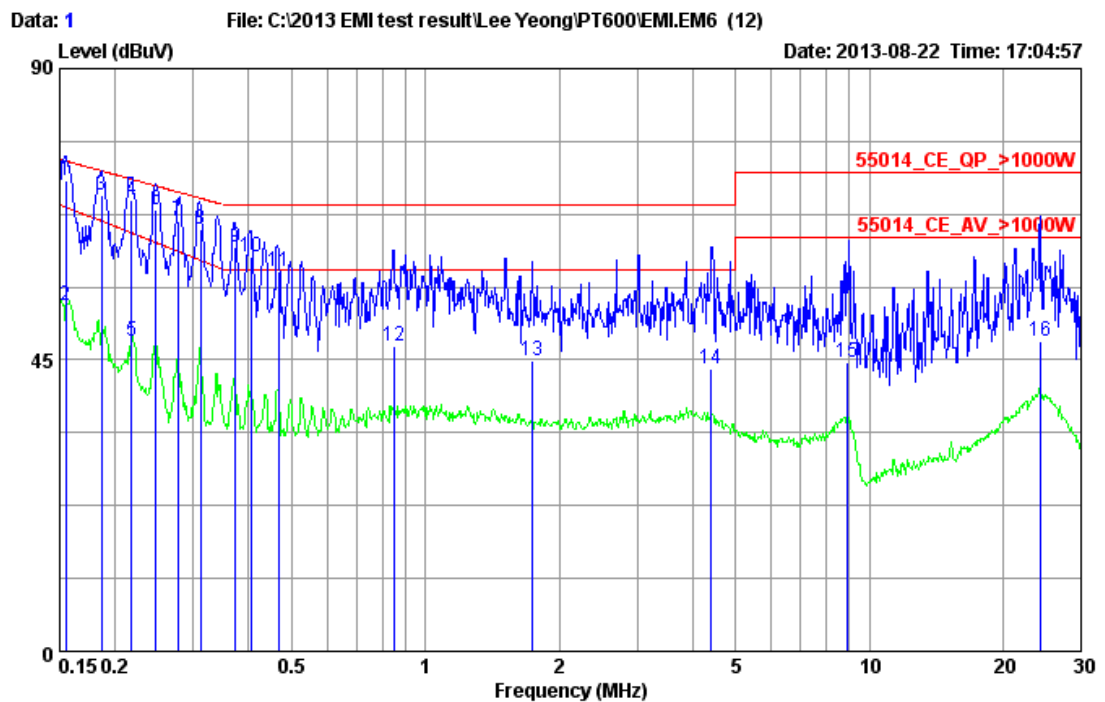
Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - L LINE  
 EUT : Portable Threading Machine  
 MODEL : PT600 (220-240V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 240V/50Hz  
 Comment : with AFH

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.156	72.33	0.11	72.44	75.69	-3.25	QP
2	0.156	54.71	0.11	54.82	68.56	-13.74	Average
3	0.185	70.52	0.11	70.63	74.25	-3.62	QP
4	0.219	69.12	0.11	69.23	72.89	-3.66	QP
5	0.248	68.15	0.11	68.26	71.84	-3.58	QP
6	0.280	66.16	0.11	66.27	70.83	-4.56	QP
7	0.310	65.75	0.12	65.87	70.00	-4.13	QP
8	0.373	62.35	0.12	62.47	69.00	-6.53	QP
9	1.160	55.31	0.14	55.45	69.00	-13.55	QP
10	1.160	45.71	0.14	45.85	59.00	-13.15	Average
11	2.422	51.99	0.17	52.16	69.00	-16.84	QP
12	2.422	42.15	0.17	42.32	59.00	-16.68	Average
13	5.476	47.71	0.22	47.93	74.00	-26.07	QP
14	5.867	47.78	0.22	48.00	74.00	-26.00	QP
15	13.695	43.07	0.66	43.73	74.00	-30.27	QP
16	18.426	44.62	0.99	45.61	74.00	-28.39	QP
17	21.035	46.17	1.08	47.25	74.00	-26.75	QP

**Figure 6: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 220-240V) with artificial hand (Line 2)**


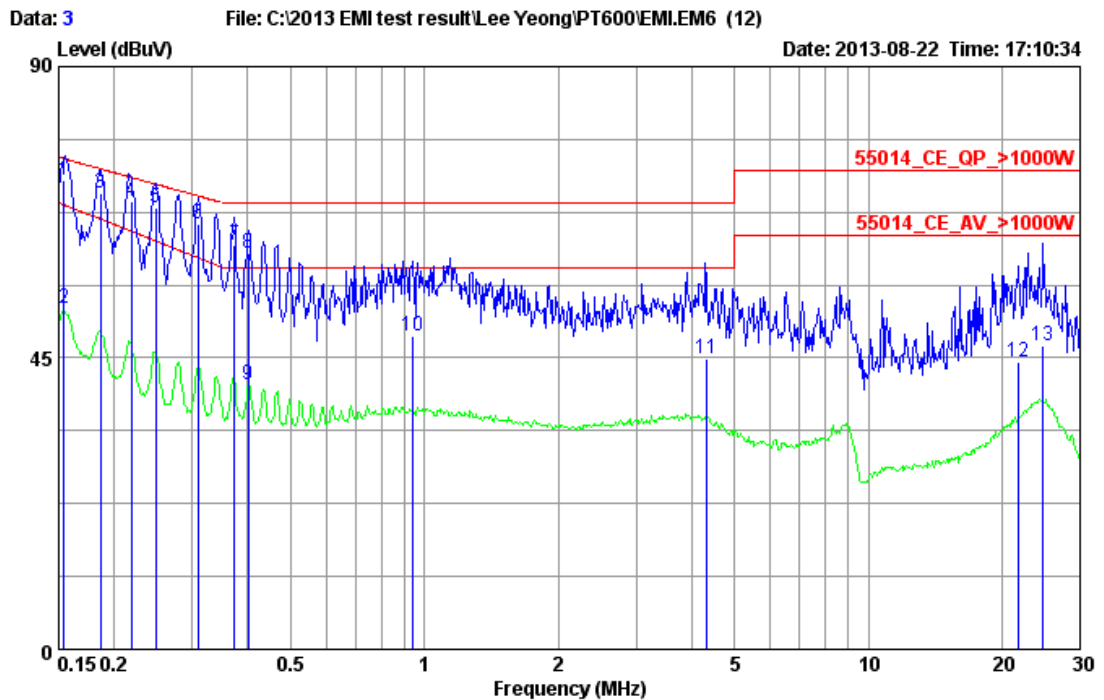
Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - N NEUTRAL  
 EUT : Portable Threading Machine  
 MODEL : PT600 (220-240V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 240V/50Hz  
 Comment : with AFH

	Freq	Read Level	Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	73.50	0.09	73.59	75.74	-2.15	QP
2	0.155	51.68	0.09	51.77	68.62	-16.85	Average
3	0.186	70.32	0.09	70.41	74.21	-3.80	QP
4	0.216	69.80	0.09	69.89	72.98	-3.09	QP
5	0.248	68.34	0.09	68.43	71.84	-3.41	QP
6	0.279	66.91	0.09	67.00	70.88	-3.88	QP
7	0.310	66.02	0.09	66.11	70.00	-3.89	QP
8	0.371	62.94	0.09	63.03	69.00	-5.97	QP
9	0.404	60.84	0.09	60.93	69.00	-8.07	QP
10	1.049	55.56	0.11	55.67	69.00	-13.33	QP
11	1.049	46.31	0.11	46.42	59.00	-12.58	Average
12	7.687	46.70	0.30	47.00	74.00	-27.00	QP

**Figure 7: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 220-240V) without artificial hand (Line 1)**


Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - L LINE  
 EUT : Portable Threading Machine  
 MODEL : PT600 (220-240V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 240V/50Hz  
 Comment : without AFH

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	72.57	0.11	72.68	75.74	-3.06	QP
2	0.155	53.30	0.11	53.41	68.62	-15.21	Average
3	0.186	70.35	0.11	70.46	74.21	-3.75	QP
4	0.217	69.58	0.11	69.69	72.94	-3.25	QP
5	0.217	47.70	0.11	47.81	64.62	-16.81	Average
6	0.247	68.07	0.11	68.18	71.89	-3.71	QP
7	0.277	66.28	0.11	66.39	70.92	-4.53	QP
8	0.312	65.18	0.12	65.30	69.96	-4.66	QP
9	0.373	62.27	0.12	62.39	69.00	-6.61	QP
10	0.404	60.89	0.12	61.01	69.00	-7.99	QP
11	0.466	58.43	0.12	58.55	69.00	-10.45	QP
12	0.848	46.98	0.13	47.11	69.00	-21.89	QP
13	1.744	44.74	0.15	44.89	69.00	-24.11	QP
14	4.407	43.50	0.21	43.71	69.00	-25.29	QP
15	8.916	44.37	0.23	44.60	74.00	-29.40	QP
16	24.271	46.89	1.10	47.99	74.00	-26.01	QP

**Figure 8: Conducted Emission, AC Mains; 0.15 - 30 MHz, PT600 (AC 220-240V) without artificial hand (Line 2)**


Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CE\_QP\_>1000W AC LISN - N NEUTRAL  
 EUT : Portable Threading Machine  
 MODEL : PT600 (220-240V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 240V/50Hz  
 Comment : without AFH

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.154	72.45	0.09	72.54	75.78	-3.24	QP
2	0.154	52.46	0.09	52.55	68.69	-16.14	Average
3	0.186	70.25	0.09	70.34	74.21	-3.87	QP
4	0.219	69.04	0.09	69.13	72.89	-3.76	QP
5	0.248	68.19	0.09	68.28	71.84	-3.56	QP
6	0.308	65.56	0.09	65.65	70.05	-4.40	QP
7	0.373	62.29	0.09	62.38	69.00	-6.62	QP
8	0.402	61.19	0.09	61.28	69.00	-7.72	QP
9	0.402	40.85	0.09	40.94	59.00	-18.06	Average
10	0.938	48.17	0.11	48.28	69.00	-20.72	QP
11	4.315	44.73	0.19	44.92	69.00	-24.08	QP
12	21.830	43.54	0.75	44.29	74.00	-29.71	QP
13	24.659	45.90	0.86	46.76	74.00	-27.24	QP

### 4.1.2 Disturbance Power (AC Mains)

Port: AC Mains  
 Basic Standard: EN 55014-1, clause 4.1.2  
 Frequency Range: 30 – 300 MHz  
 Limits: Table 2a, (Tools)

<b>Result:</b>	<b>PASS</b>
----------------	-------------

#### Test Setup

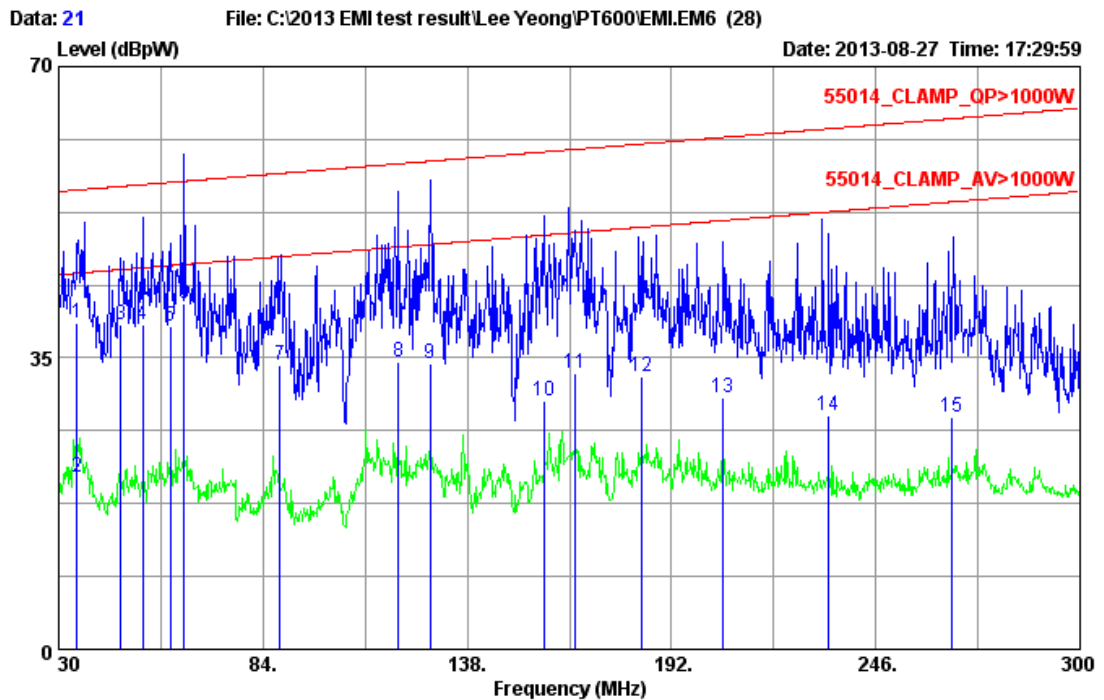
Date of Testing: 2013.08.27  
 Model: PT600 (AC 110-120V), PT600 (AC 220-240V)  
 Input Voltage: AC 110V and AC 240V, 50Hz  
 Operational Mode: ON, see 3.1  
 Earthing: Not intended

**Table 3: Disturbance Power, Absorbing Clamp, 30 - 300 MHz**

#### Settings

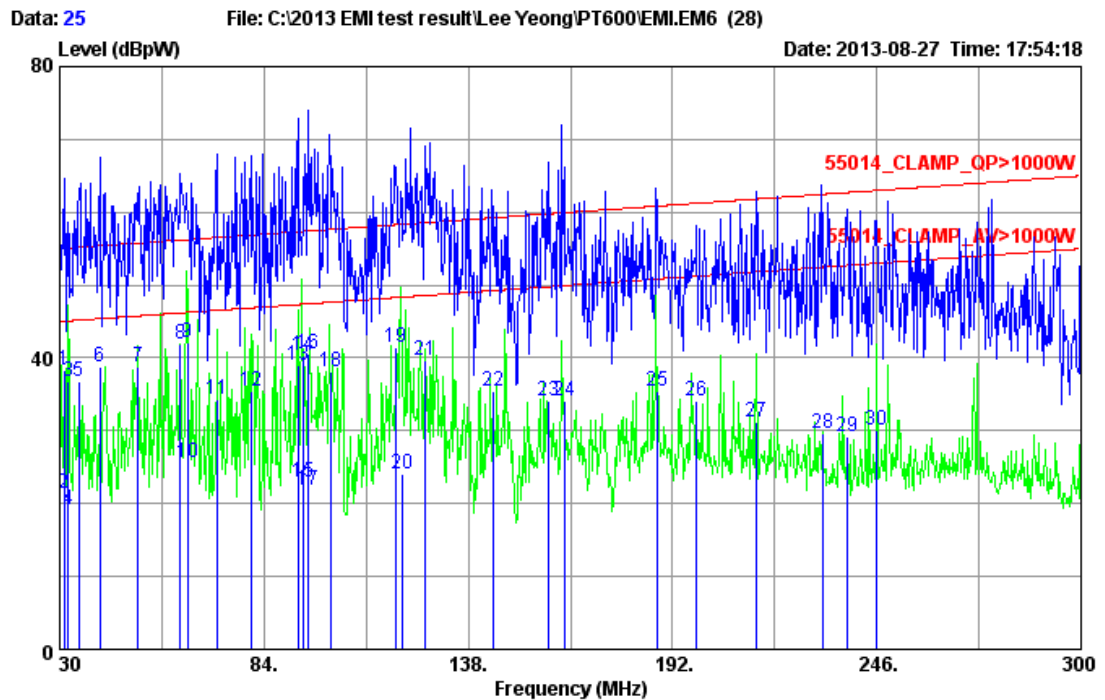
Frequency			Settings		
Start	Stop	Step Size	IF Bandwidth	Detector	Meas. Time
30 MHz	300 MHz	62.5 kHz	120 kHz	QP/AV	1ms/1s



**Figure 9: Disturbance Power, 30 – 300 MHz, PT600 (AC 110-120V)**


Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CLAMP\_QP>1000W  
 EUT : Portable Threading Machine  
 MODEL : PT600 (110-120V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 110V/50Hz  
 Comment :

	Read	Limit	Over				
Freq	Level	Factor	Level	Line	Limit	Remark	
MHz	dBpW	dB	dBpW	dBpW	dB		
1	34.860	24.47	14.77	39.24	55.18	-15.94	QP
2	34.860	5.82	14.77	20.59	45.18	-24.59	Average
3	46.470	23.60	15.34	38.94	55.61	-16.67	QP
4	52.140	23.35	15.57	38.92	55.82	-16.90	QP
5	59.430	23.04	15.86	38.90	56.09	-17.19	QP
6	63.210	24.90	16.55	41.45	56.23	-14.78	QP
7	88.590	16.61	17.55	34.16	57.17	-23.01	QP
8	119.910	16.66	17.78	34.44	58.33	-23.89	QP
9	128.280	16.44	17.95	34.39	58.64	-24.25	QP
10	158.250	11.11	18.82	29.93	59.75	-29.82	QP
11	166.350	13.97	19.17	33.14	60.05	-26.91	QP
12	184.170	13.02	19.76	32.78	60.71	-27.93	QP
13	205.770	10.62	19.56	30.18	61.51	-31.33	QP
14	233.580	9.04	19.08	28.12	62.54	-34.42	QP
15	265.980	8.56	19.34	27.90	63.74	-35.84	QP

**Figure 10: Disturbance Power, 30 – 300 MHz, PT600 (AC 220-240V)**


Site : TUV Rheinland Taichung Shielding Room  
 Condition : 55014\_CLAMP\_QP>1000W  
 EUT : Portable Threading Machine  
 MODEL : PT600 (220-240V)  
 Manuf. :  
 Op Condition : Power on (R)  
 Power : AC 240V/50Hz  
 Comment :

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	
1	31.080	23.78	14.54	38.32	55.04	-16.72	QP
2	31.080	6.90	14.54	21.44	45.04	-23.60	Average
3	32.160	22.14	14.61	36.75	55.08	-18.33	QP
4	32.160	4.48	14.61	19.09	45.08	-25.99	Average
5	35.130	22.02	14.79	36.81	55.19	-18.38	QP
6	40.530	23.70	15.10	38.80	55.39	-16.59	QP
7	50.790	23.34	15.51	38.85	55.77	-16.92	QP
8	61.860	25.63	16.27	41.90	56.18	-14.28	QP
9	63.750	25.38	16.67	42.05	56.25	-14.20	QP
10	63.750	9.01	16.67	25.68	46.25	-20.57	Average
11	71.580	16.41	17.98	34.39	56.54	-22.15	QP
12	80.760	17.38	17.94	35.32	56.88	-21.56	QP

**Figure 11: Disturbance Power, 30 – 300 MHz, PT600 (AC 220-240V)**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	
13	92.910	21.49	17.45	38.94	57.33	-18.39	QP
14	94.260	22.90	17.44	40.34	57.38	-17.04	QP
15	94.260	5.42	17.44	22.86	47.38	-24.52	Average
16	95.880	23.22	17.42	40.64	57.44	-16.80	QP
17	95.880	4.44	17.42	21.86	47.44	-25.58	Average
18	101.550	20.67	17.41	38.08	57.65	-19.57	QP
19	118.830	23.65	17.76	41.41	58.29	-16.88	QP
20	120.450	6.34	17.79	24.13	48.35	-24.22	Average
21	126.390	21.77	17.91	39.68	58.57	-18.89	QP
22	144.480	17.19	18.34	35.53	59.24	-23.71	QP
23	159.060	15.17	18.85	34.02	59.78	-25.76	QP
24	163.380	15.04	19.03	34.07	59.94	-25.87	QP
25	187.950	15.72	19.74	35.46	60.85	-25.39	QP
26	198.480	14.41	19.69	34.10	61.24	-27.14	QP
27	214.140	11.76	19.40	31.16	61.82	-30.66	QP
28	231.690	10.47	19.10	29.57	62.47	-32.90	QP
29	238.170	10.15	19.01	29.16	62.71	-33.55	QP
30	246.000	11.07	19.07	30.14	63.00	-32.86	QP

### 4.1.3 Discontinuous Interferences

Port: AC Mains  
Basic Standard: EN 55014-1, clause 4.2 and clause 5  
Frequencies: 0.15 MHz, 0.5 MHz, 1.4 MHz, 30 MHz  
Limits: EN 55014-1, clause 4.2.2

<b>Result:</b>	N/A
----------------	-----

The EUT cannot generate clicks during normal operation; therefore, this test is not applicable.

## 4.2 Disturbances in supply systems

### 4.2.1 Harmonics

Port: AC Mains  
Basic Standard: EN 61000-3-2  
Classification: Class B  
Limits: EN 61000-3-2, clause 7

<b>Result:</b>	PASS
----------------	------

#### Test Setup

Date of Testing: 2013.08.26  
Model: PT600 (AC 220-240V)  
Input Voltage: AC 230V, 50Hz  
Operational Mode: ON, see 3.1  
Earthing: Not intended

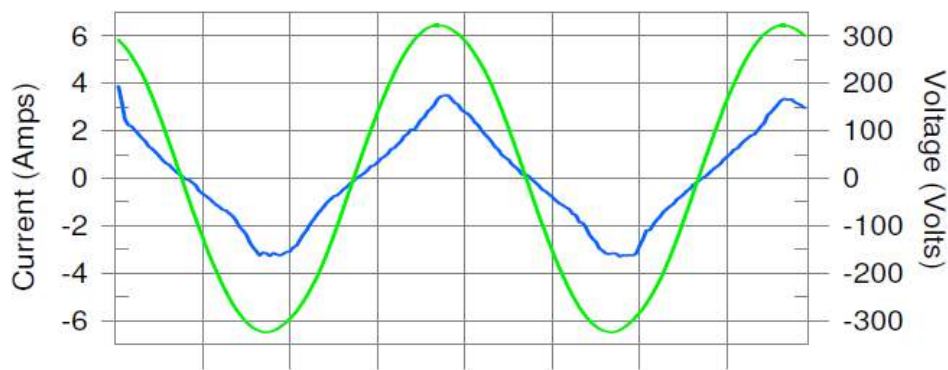
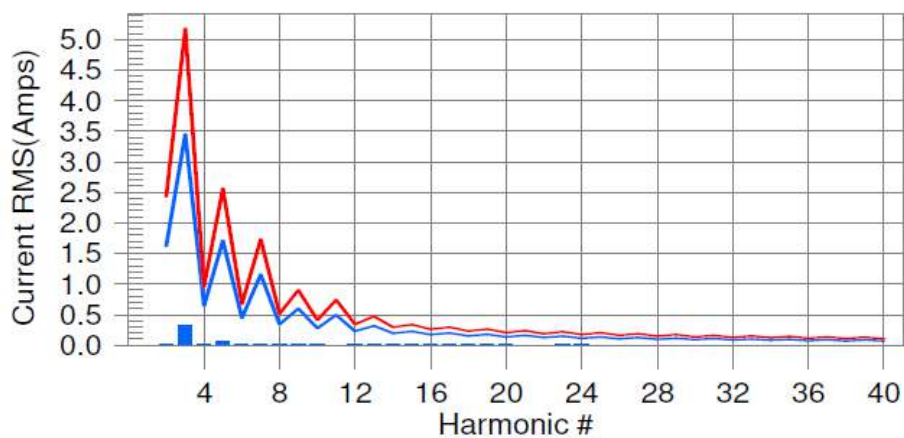
**Figure 12: Harmonics, PT600 (AC 220-240V)**

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**Harmonics – Class-B**

EUT: Portable Threading Machine - PT600 (220-240V)	Tested by: STW
Test category: Class-B (EN 61000-3-2)	Test Margin: 100
Test date: 8/26/2013	Start time: 2:41:57 PM
Test duration (min): 3	End time: 2:45:16 PM
Comment: Power on	Data file name: H-000497.cts_data
Customer: Lee Yeong	

**Test Result: Pass**      Source qualification: Normal

Current & voltage waveforms

Harmonics and Class B limit line      European Limits

**Test result: Pass**      Worst harmonic was #3 with 8.92% of the limit.

**Table 4: Harmonics, PT600 (AC 220-240V)**

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**Current Test Result Summary (Run time)**

EUT: Portable Threading Machine - PT600 (220-240V)      Tested by: STW  
 Test category: Class-B (EN 61000-3-2)                      Test Margin: 100  
 Test date: 8/26/2013    Start time: 2:41:57 PM                      End time: 2:45:16 PM  
 Test duration (min): 3    Data file name: H-000497.cts\_data  
 Comment: Power on  
 Customer: Lee Yeong

Test Result: Pass      Source qualification: Normal  
 THC(A): 0.31    I-THD(%): 15.94    POHC(A): 0.000    POHC Limit(A): 0.480  
 Highest parameter values during test:

V <sub>RMS</sub> (Volts): 231.05	Frequency(Hz): 49.99
I <sub>Peak</sub> (Amps): 4.038	I <sub>RMS</sub> (Amps): 2.069
I <sub>Fund</sub> (Amps): 2.031	Crest Factor: 2.006
Power (Watts): 465.9	Power Factor: 0.982

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.009	1.620	0.6	0.011	2.430	0.45	Pass
3	0.308	3.450	8.9	0.316	5.175	6.10	Pass
4	0.007	0.645	1.1	0.008	0.968	0.81	Pass
5	0.062	1.710	3.6	0.063	2.565	2.47	Pass
6	0.005	0.450	1.0	0.007	0.675	1.01	Pass
7	0.014	1.155	1.2	0.015	1.733	0.86	Pass
8	0.005	0.345	1.4	0.006	0.518	1.14	Pass
9	0.011	0.600	1.8	0.012	0.900	1.29	Pass
10	0.004	0.276	0.0	0.005	0.414	0.00	Pass
11	0.002	0.495	0.0	0.003	0.743	0.00	Pass
12	0.004	0.230	0.0	0.005	0.344	0.00	Pass
13	0.004	0.315	0.0	0.005	0.473	0.00	Pass
14	0.004	0.197	0.0	0.005	0.296	0.00	Pass
15	0.002	0.225	0.0	0.003	0.338	0.00	Pass
16	0.003	0.173	0.0	0.005	0.259	0.00	Pass
17	0.004	0.199	0.0	0.005	0.297	0.00	Pass
18	0.003	0.153	0.0	0.004	0.230	0.00	Pass
19	0.004	0.178	0.0	0.005	0.266	0.00	Pass
20	0.002	0.138	0.0	0.003	0.207	0.00	Pass
21	0.002	0.161	0.0	0.003	0.241	0.00	Pass
22	0.002	0.125	0.0	0.003	0.188	0.00	Pass
23	0.003	0.147	0.0	0.004	0.220	0.00	Pass
24	0.002	0.115	0.0	0.003	0.173	0.00	Pass
25	0.002	0.135	0.0	0.003	0.203	0.00	Pass
26	0.002	0.106	0.0	0.002	0.159	0.00	Pass
27	0.002	0.125	0.0	0.002	0.188	0.00	Pass
28	0.002	0.099	0.0	0.003	0.148	0.00	Pass
29	0.002	0.116	0.0	0.003	0.175	0.00	Pass
30	0.002	0.092	0.0	0.002	0.138	0.00	Pass
31	0.001	0.110	0.0	0.002	0.163	0.00	Pass
32	0.001	0.086	0.0	0.002	0.129	0.00	Pass
33	0.002	0.102	0.0	0.002	0.153	0.00	Pass
34	0.001	0.081	0.0	0.002	0.122	0.00	Pass
35	0.002	0.096	0.0	0.002	0.145	0.00	Pass
36	0.001	0.077	0.0	0.002	0.115	0.00	Pass
37	0.001	0.092	0.0	0.002	0.137	0.00	Pass
38	0.001	0.073	0.0	0.002	0.109	0.00	Pass
39	0.002	0.087	0.0	0.002	0.130	0.00	Pass
40	0.001	0.069	0.0	0.002	0.104	0.00	Pass

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## 4.2.2 Voltage Fluctuations

Port: AC Mains  
Basic Standard: EN 61000-3-3  
Limits: EN 61000-3-3

**Result:****PASS**

### Test Setup

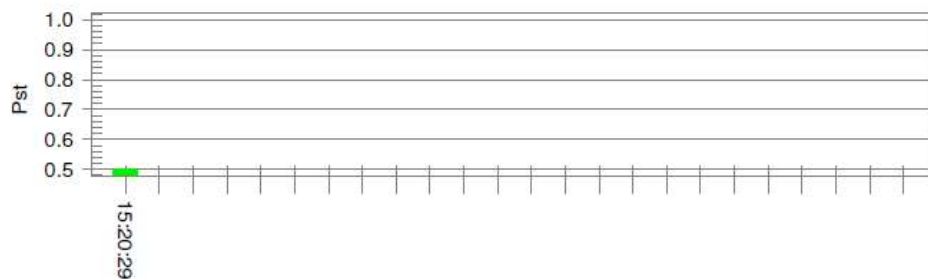
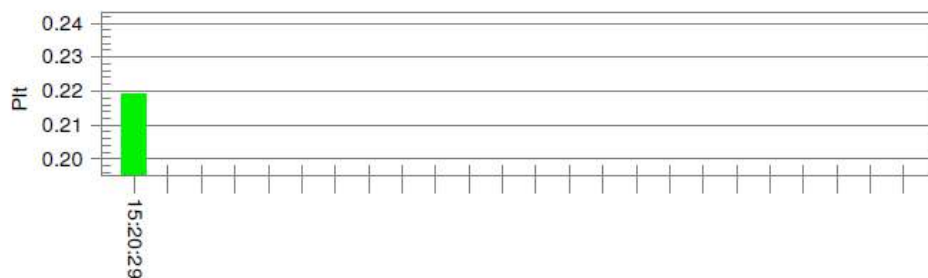
Date of Testing: 2013.08.26  
Model: PT600 (AC 220-240V)  
Input Voltage: AC 230V, 50Hz  
Operational Mode: ON, see 3.1  
Earthing: Not intended

**Table 5: Flicker (Pst), PT600 (AC 220-240V)**

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**Flicker Test Summary per EN/IEC61000-3-3 (Run time)**

<b>EUT: Portable Threading Machine - PT600 (220-240V)</b>	<b>Tested by: STW</b>
<b>Test category: dt,dmax,dc and Pst (EN 61000-3-3)</b>	<b>Test Margin: 100</b>
<b>Test date: 8/26/2013</b>	<b>Start time: 3:10:10 PM</b>
<b>Test duration (min): 10</b>	<b>End time: 3:20:29 PM</b>
<b>Comment: Power on</b>	<b>Data file name: F-000498.cts_data</b>
<b>Customer: Lee Yeong</b>	

**Test Result: Pass**
**Status: Test Completed**
**Pst<sub>t</sub> and limit line**
**European Limits**

**Plt and limit line**

**Parameter values recorded during the test:**

<b>Vrms at the end of test (Volt):</b>	<b>230.34</b>		
<b>Highest dt (%):</b>	<b>-0.42</b>	<b>Test limit (%):</b>	<b>3.30 Pass</b>
<b>Time(mS) &gt; dt:</b>	<b>0.0</b>	<b>Test limit (mS):</b>	<b>500.0 Pass</b>
<b>Highest dc (%):</b>	<b>-0.15</b>	<b>Test limit (%):</b>	<b>3.30 Pass</b>
<b>Highest dmax (%):</b>	<b>0.34</b>	<b>Test limit (%):</b>	<b>4.00 Pass</b>
<b>Highest Pst (10 min. period):</b>	<b>0.502</b>	<b>Test limit:</b>	<b>1.000 Pass</b>



**Table 6: Flicker (dmax), PT600 (AC 220-240V)**

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**Flicker Test Summary per EN/IEC61000-3-3 (Run time)**

EUT: Portable Threading Machine - PT600 (220-240V)	Tested by: STW
Test category: 24 x dmax Test	Test Margin: 100
Test date: 8/26/2013	Start time: 3:24:21 PM
Test duration (min): 20	End time: 3:29:17 PM
Comment: Power on	Data file name: F-000499.cts_data
Customer: Lee Yeong	

**Test Result: Pass**
**Status: Test Completed**
European Limits

Parameter values recorded during the test:

Vrms at the end of test (Volt):	231.17	
Average dmax (%):	3.04	Test limit (%): 7.00

Test Number	Dmax	
1	-3.095	
2	-3.085	
3	-3.003	
4	-3.022	
5	-2.755	
6	-2.928	
7	-2.950	
8	-3.061	
9	-3.172	
10	-3.210	
11	-3.087	
12	-3.240	Highest dmax (Disregarded)
13	-3.048	
14	-2.821	
15	-2.913	
16	-3.145	
17	-2.986	
18	-3.158	
19	-3.101	
20	-3.058	
21	-3.070	
22	-3.105	
23	-3.189	
24	-2.744	Lowest dmax (Disregarded)
Average of 22 Dmax	3.044	
Lowest Dmax	-2.744	
Highest Dmax	-3.240	

## 5 Test Results IMMUNITY

**Result:**
**PASS**

### 5.1 Enclosure Port

#### 5.1.1 Electrostatic Discharge

Port:	Enclosure	
Basic Standard:	EN 61000-4-2	
Performance Criteria:	B	
Test Specification:	EN 55014-2:1997+A1+A2	
	Voltage:	8 kV (Air Discharge) 4 kV (Contact Discharge)
	Test Level:	V.C.P(= level 3 of EN 61000-4-2)

**Result:**
**PASS**

#### Test Setup

Date of Testing:	2013.09.09
Model:	PT600 (AC 220-240V)
Input Voltage:	AC 240V, 50Hz
Operational mode:	See clause 3.1
Earthing:	Not intended
Temperature:	25°C
Relative Humidity:	50%
Atmospheric pressure:	984 mbar

**Table 7: Electrostatic Discharge**

Testpoint	Polarity	Number of Discharges	Observation	Result
Enclosure, Seams	+/-8KV Air	20	normal function	<b>PASS</b>
Switch	+/-8KV Air	20	normal function	<b>PASS</b>
Metal part, Screws	+/-4KV Con.	20	normal function	<b>PASS</b>
V.C.P.	+/-4KV	20	normal function	<b>PASS</b>

No abnormalities were observed during and directly after the test.

## 5.2 Input and Output AC Power Ports

### 5.2.1 Fast Transients Common Mode

Port:	AC Mains Input		
Basic Standard:	EN 61000-4-4		
Performance Criteria:	B		
Test Specification:	EN 55014-2:1997+A1+A2		
	Peak Voltage:	1 kV (= level 2 of EN 61000-4-4)	
	$T_r/T_h$ :	5/50 ns	
	Rep. Frequency:	5 kHz	

**Result:**
**PASS**

#### Test Setup

Date of Testing:	2013.09.11
Model:	PT600 (AC 220-240V)
Input Voltage:	AC 240V, 50Hz
Operational Mode:	See clause 3.1
Earthing:	Not intended
Temperature:	25°C
Relative Humidity:	50%
Atmospheric pressure:	984 mbar

**Table 8: Fast Transients Common Mode (In-/Output AC Power Ports)**

Testpoint	Polarity	Observation	Result
L	+/-	normal function	<b>PASS</b>
N	+/-	normal function	<b>PASS</b>
L-N	+/-	normal function	<b>PASS</b>

No abnormalities were observed during and directly after the test.

### 5.2.2 Surges

Port: AC Mains Input  
Basic Standard: EN 61000-4-5  
Performance Criteria: B  
Test Specification: EN 55014-2:1997+A1+A2  
Peak Voltage: 1 kV for Differential mode  
2 kV for Common mode  
Test Level: (= level 3 of EN 61000-4-5)  
 $T_r/T_h$ : 1,2/50  $\mu$ s, (8/20)  $\mu$ s

**Result:**
**PASS**

### Test Setup

Date of Testing: 2013.10.07  
Model: PT600 (AC 220-240V)  
Input Voltage: AC 240V, 50Hz  
Operational Mode: See clause 3.1  
Earthing: Not intended  
Temperature: 25°C  
Relative Humidity: 50%  
Atmospheric pressure: 984 mbar

**Table 9: Surges**

Testpoint	Voltage	Polarity	No. of Pulse	Phase	Observation
L-N	1KV	+/-	5	0°, 90°, 180°, 270°	normal function

No abnormalities were observed during and directly after the test.

### 5.2.3 Conducted Disturbances Induced by Current Injection

Port: AC Mains Input  
 Basic Standard: EN 61000-4-6  
 Performance Criteria: A  
 Test Specification: EN 55014-2:1997+A1+A2  
 Frequency Range: 0.15 – 230 MHz  
 Voltage Level: 3Vrms (modulated)  
 (= level 2 of EN 61000-4-6)  
 Modulation: 1KHz, 80% AM

**Result:**
**PASS**

#### Test Setup

Date of Testing: 2013.09.09  
 Model: PT600 (AC 220-240V)  
 Input Voltage: AC 240V, 50Hz  
 Operational Mode: See clause 3.1  
 Earthing: Not intended  
 Coupling: Coupling Network CDN 801-M2  
 Temperature: 25°C  
 Relative Humidity: 50%  
 Atmospheric pressure: 984 mbar

**Table 10: Conducted Disturbances Induced by Injecting Current; 0.15 - 230 MHz**

#### Settings

Frequency			Settings			
Start	Stop	Step Size	Voltage Level	Sweep mode	Meas. Time	Modulate
150 kHz	230 MHz	1% of preceding frequency	3Vrms	auto	2 s	1 kHz, 80 % AM

No abnormalities were observed during and directly after the test.

### 5.2.4 Voltage Dip and Interruptions

Port: AC Mains Input  
 Basic Standard: EN 61000-4-11  
 Performance Criteria: C  
 Test Specification: EN 55014-2:1997+A1+A2  
 Test Level: 0 %  $U_T$  for Interruptions,  
 40 % & 70 %  $U_T$  for Dips.

**Result:**
**PASS**

#### Test Setup

Date of Testing: 2013.09.11  
 Model: PT600 (AC 220-240V)  
 Input Voltage: AC 240V, 50Hz  
 Operational Mode: See clause 3.1  
 Earthing: Not intended  
 Temperature: 25°C  
 Relative Humidity: 50%  
 Atmospheric pressure: 984 mbar

**Table 11: Voltage Dips and Interruptions (Input AC Power Ports)**

Voltage Dips	Duration	Observation	Result
0%	0.5 cys	The subject sample was slow down running during testing; but it was self-recoverable after testing.	<b>PASS</b>
40%	10 cys	The subject sample was slow down running during testing; but it was self-recoverable after testing.	<b>PASS</b>
70%	25 cys	The subject sample was slow down running during testing; but it was self-recoverable after testing.	<b>PASS</b>

## 6 Photographs of Test Setup



Picture 1: Test setup for Conducted Emission, PT600 (AC 110-120V)



Picture 2: Test setup for Disturbance Power, PT600 (AC 110-120V)



Picture 3: Test setup for Conducted Emission, PT600 (AC 220-240V)



Picture 4: Test setup for Disturbance Power, PT600 (AC 220-240V)





**Picture 5: Test setup for Harmonics and Flickers, PT600 (AC 220-240V)**



**Picture 6: Test setup for Electrostatic Discharge, PT600 (AC 220-240V)**



Picture 7: Test setup for Electrical Fast Transient, PT600 (AC 220-240V)



Picture 8: Test setup for Surge, PT600 (AC 220-240V)



Picture 9: Test setup for Conducted Susceptibility, PT600 (AC 220-240V)



Picture 10: Test setup for Voltage Dips and Interruptions, PT600 (AC 220-240V)

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