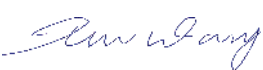


Prüfbericht-Nr.: Test Report No.:	11037899 006	Auftrags-Nr.: Order No.:	238102754	Seite 1 von 3 Page 1 of 3
Kunden-Referenz-Nr.: Client Reference No.:	238006696	Auftragsdatum: Order date:	March 19, 2019	
Auftraggeber: Client:	Zeng Hsing Ind. Co., Ltd. No. 78, Yong Cheng Rd., Taiping District, Taichung City 411, Taiwan, R.O.C.			
Prüfgegenstand: Test item:	Household Sewing Machine			
Bezeichnung / Typ-Nr.: Identification / Type No.:	82N0, M10C			
Auftrags-Inhalt: Order content:	TUV Rheinland - EMC Mark Approval			
Prüfgrundlage: Test specification:	EN 55014-1:2017 EN 55014-2:2015 EN 61000-3-2:2014 EN 61000-3-3:2013			
Wareneingangsdatum: Date of receipt:	N/A			
Prüfmuster-Nr.: Test sample No.:	N/A			
Prüfzeitraum: Testing period:	March 28, 2019			
Ort der Prüfung: Place of testing:	Taichung Laboratory			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
				
March 28, 2019 Shirley Su/Section Manager		March 28, 2019 Steven Wang/Technical Certifier		
Datum Date	Name/Stellung Name/Position	Unterschrift Signature	Datum Date	Name/Stellung Name/Position
			Unterschrift Signature	
Sonstiges / Other:				
1. Additional approval.				
2. Standard update for all models covered by test report 11037899 001 to 005 (CC 50291278 0001 to 0006).				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Details in the previous section		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 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				
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. 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.				

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1. Test Site

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

2. Description of the Test Samples

2.1. General Description of Equipment

The Household Sewing Machine as approved on test report 11037899 001 to 005 is modified below:

1. Standard update for below models:

8280A-L, 8280C-L, 82E2-L,
M10A-L, M20A-L, M10B-L, M20B-L, M26A-L,
8XE0-L (X = 3, 4, 5, 6 or 7),
8XK0-L (X = 3, 4, 5, 6 or 7),
8X80B-L (X = 1, 2, 3 or 4).

2. Additional approval for 82N0 and M10C.

82N0 is identical to approved 8280A-L except outlook mechanical design only.

M10C is identical to approved M10B-L except outlook mechanical design only.

The above changes have been considered but have no EMC impact; therefore, compliance is assumed without further testing.

2.2. Rating and Physical Characteristics

Type Designation:	82N0, M10C
Rated Voltage:	AC 220-240V, 50-60Hz
Rated Power:	70W
Protection Class:	II

Prüfbericht-Nr.: Test Report No.:	11037899 005	Auftrags-Nr.: Order No.:	114046743	Seite 1 von 3 Page 1 of 3
Kunden-Referenz-Nr.: Client Reference No.:	12086458	Auftragsdatum: Order date:	Feb. 06, 2016	
Auftraggeber: Client:	Zeng Hsing Ind. Co., Ltd. No. 78, Yong Cheng Rd., Taiping District, Taichung City 411, Taiwan, R.O.C.			
Prüfgegenstand: Test item:	Household Sewing Machine			
Bezeichnung / Typ-Nr.: Identification / Type No.:	8280A-L, 8280C-L, 82E2-L, M10A-L, M20A-L, M10B-L, M20B-L, M26A-L, 8XE0-L (X = 3, 4, 5, 6 or 7), 8XK0-L (X = 3, 4, 5, 6 or 7), 8X80B-L (X = 1, 2, 3 or 4)			
Auftrags-Inhalt: Order content:	TUV Rheinland - EMC Mark Approval			
Prüfgrundlage: Test specification:	EN 55014-1:2006+A1:2009+A2:2011 EN 55014-2:2015 EN 61000-3-2:2014 EN 61000-3-3:2013			
Wareneingangsdatum: Date of receipt:	N/A			
Prüfmuster-Nr.: Test sample No.:	N/A			
Prüfzeitraum: Testing period:	N/A			
Ort der Prüfung: Place of testing:	N/A			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 April 08, 2016 Shirley Su/Section Manager Datum Name/Stellung Unterschrift Date Name/Position Signature		 April 08, 2016 Steven Wang/Sr. Project Manager Datum Name/Stellung Unterschrift Date Name/Position Signature		
Sonstiges / Other:				
Alternative component, additional factory and standard update.				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Details in the previous section		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 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				
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1. Test Site

1.1. Testing Location

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

2. Description of the Test Samples

2.1. General Description of Equipment

The Household Sewing Machines with the type designation as listed below have been approved as shown on test report 11037899 001 with following modifications:

1. Alternative capacitor (X2-capacitor 0.082uF across power inlet) for all models.
2. Standard update.
3. Add additional factory as below:

(Zeng Hsing Industrial Co., Ltd.
28, VSIP II-A street 28, Vietnam-Singapore Industrial Park II-A Tan Uyen Dist.,
Binh Duong Province, Vietnam)

The above changes have been considered but do not affect the previously approved models; therefore, compliance is assumed without further testing.

2.2. Rating and Physical Characteristics

Type Designation:	8280A-L, 8280C-L, 82E2-L, M10A-L, M20A-L, M10B-L, M20B-L, M26A-L, 8XE0-L (X = 3, 4, 5, 6 or 7), 8XK0-L (X = 3, 4, 5, 6 or 7), 8X80B-L (X = 1, 2, 3 or 4)
Rated Voltage:	AC 220-240V, 50/60Hz
Rated Power:	70W
Protection Class:	II

Prüfbericht-Nr.: Test Report No.:	11037899 001	Auftrags-Nr.: Order No.:	114025633	Seite 1 von 30 Page 1 of 30
Kunden-Referenz-Nr.: Client Reference No.:	12073754	Auftragsdatum: Order date:	Aug. 08, 2014	
Auftraggeber: Client:	Zeng Hsing Ind. Co., Ltd. No. 78, Yong Cheng Rd., Taiping District, Taichung City 411, Taiwan, R.O.C.			
Prüfgegenstand: Test item:	Household Sewing Machine			
Bezeichnung / Typ-Nr.: Identification / Type No.:	8280A-L, 8280C-L, 82E2-L, M10A-L, M20A-L, M10B-L, M20B-L, M26A-L, 8XE0-L (X = 3, 4, 5, 6 or 7), 8XK0-L (X = 3, 4, 5, 6 or 7), 8X80B-L (X = 1, 2, 3 or 4)			
Auftrags-Inhalt: Order content:	TUV Rheinland - EMC Mark Approval			
Prüfgrundlage: Test specification:	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 61000-3-3:2013			
Wareneingangsdatum: Date of receipt:	Aug. 04, 2014			
Prüfmuster-Nr.: Test sample No.:	A000092931			
Prüfzeitraum: Testing period:	Aug. 12 - 19, 2014			
Ort der Prüfung: Place of testing:	Taichung Laboratory			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
Aug. 21, 2014 Shirley Su/Sr. Project Manager Datum Name/Stellung Unterschrift Date Name/Position Signature		Aug. 21, 2014 Steven Wang/Sr. Project Manager Datum Name/Stellung Unterschrift Date Name/Position Signature		
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 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				
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1 Test Site

1.1 Testing Location

TÜV Rheinland Taiwan Ltd., Taichung Branch
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	2.47 dB
Disturbance Power	30MHz - 300MHz	3.87 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 Household Sewing Machine with the type designation as listed below consists of AC motor, foot controller and LED light.

All new models are the derivative models of the approved sewing machines. The suffix “L” in the model name means LED light is used instead of incandescent bulb.

All models are electrically identical except mechanical design. Due to similarity among all models, **8280A-L** (with Motor WM-298I-7 and Foot controller 4C-326G) has been tested as representative

2.2 Rating and Physical Characteristics

Type Designation:	8280A-L, 8280C-L, 82E2-L, M10A-L, M20A-L, M10B-L, M20B-L, M26A-L, 8XE0-L (X = 3, 4, 5, 6 or 7), 8XK0-L (X = 3, 4, 5, 6 or 7), 8X80B-L (X = 1, 2, 3 or 4)
Rated Voltage:	AC 220-240V, 50/60Hz
Rated Power:	70W
Protection Class:	II

2.3 Sources of Interference

AC brush motor (WM-298I-7 or HF(S)-07250)

Foot controller (4C-326G, KD-2902, FC-2902A, FC-2902C or FC-2902D)

2.4 Noise Suppression Parts

See Constructional Data Form (CDF)

2.5 Submitted Documents

- (1) Model List
- (2) Rating Label

3 Measurement Conditions

3.1 Modes of Operation

The EUT was tested in “ON” mode with the speed that interfered the most unfavorable disturbances for all tests as described hereafter.

3.2 Additional Equipment

The EUT was tested as an independent unit without any additional equipment.

3.3 Test Setup

The test setup was realized on a table of 10-cm or 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/Disturbance Power Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Next Calibration
1	Test Receiver	R&S	ESCS30	100055	2015/05/27
2	LISN (AC)	R&S	ESH3-Z5	1000128	2015/05/25
3	Absorbing Clamp	R&S	MDS-21	100040	2015/05/26

For Harmonics/Flicker Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Next Calibration
1	Harmonics/Flickers Tester	Schaffner	Proflin 2100/CCN 1000-1	72334	2015/06/23

For EMS/ESD/EFT/Surge/Dip Testing

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Next Calibration
1	ESD/EFT/Surge/Dip Generator	EMC PARTNER	TRA3000 E-F-S-D-V	1215	2015/05/04
2	ESD Generator	Noiseken	ESS-B3011	ESS11Y2449	2015/06/23
3	ESD Gun	Noiseken	GT-30R	ESS11Y2469	2015/06/23

For EMS/CS Testing

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Next Calibration
1	CS Test System	Schaffner	NSG2070-1	1072	2015/01/26
2	CDN-M2/M3	Schaffner	CDN M016	20815	2015/01/26

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

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

4 Test Results EMISSION

Result:	PASS
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4.1 Continuous Interference

4.1.1 Conducted Emission

Port: AC Mains
Basic Standard: EN 55014-1, clause 4.1.1
Frequency Range: 0.15 - 30 MHz
Limits: Household appliances, Table 1

Result:	PASS
---------	------

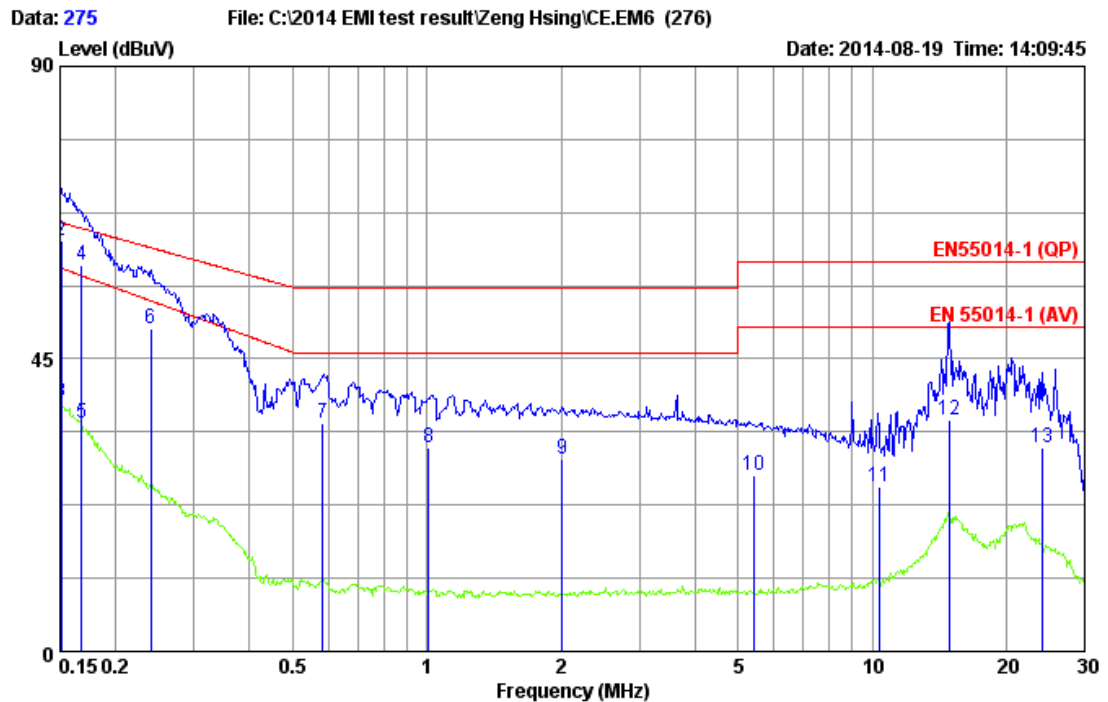
Test Setup

Date of Testing: Aug. 19, 2014
Model: 8280A-L
Input Voltage: AC 240V, 50Hz
Operational Mode: ON, see 3.1
Earthing: Not intended

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

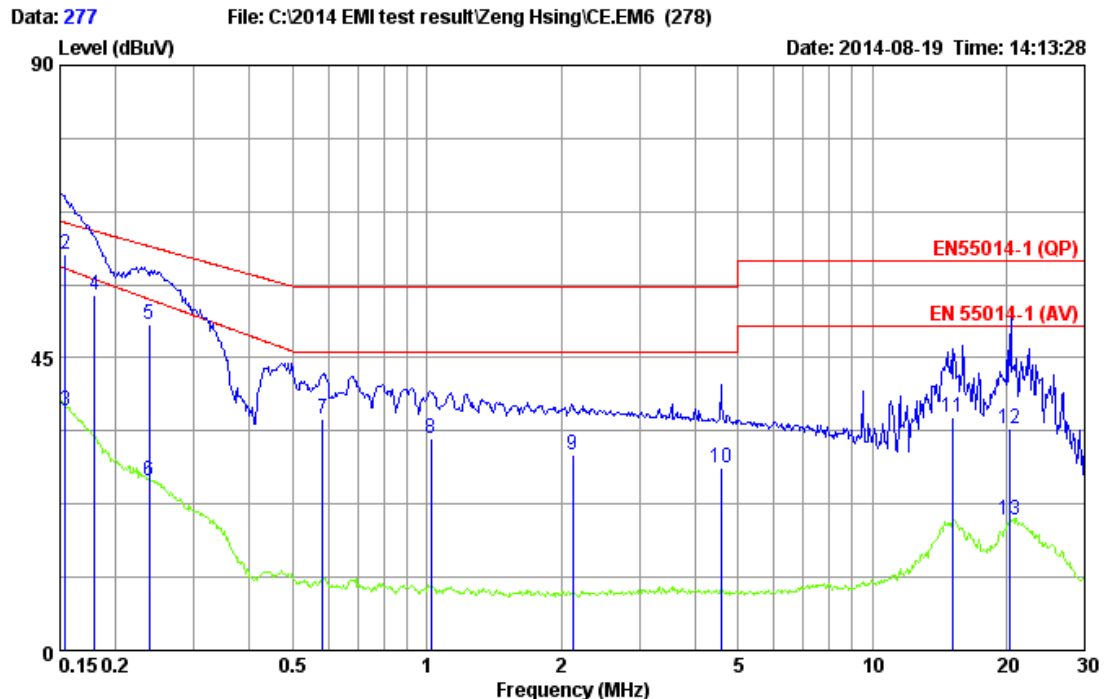
Settings

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; Lowest Speed (Line 1)


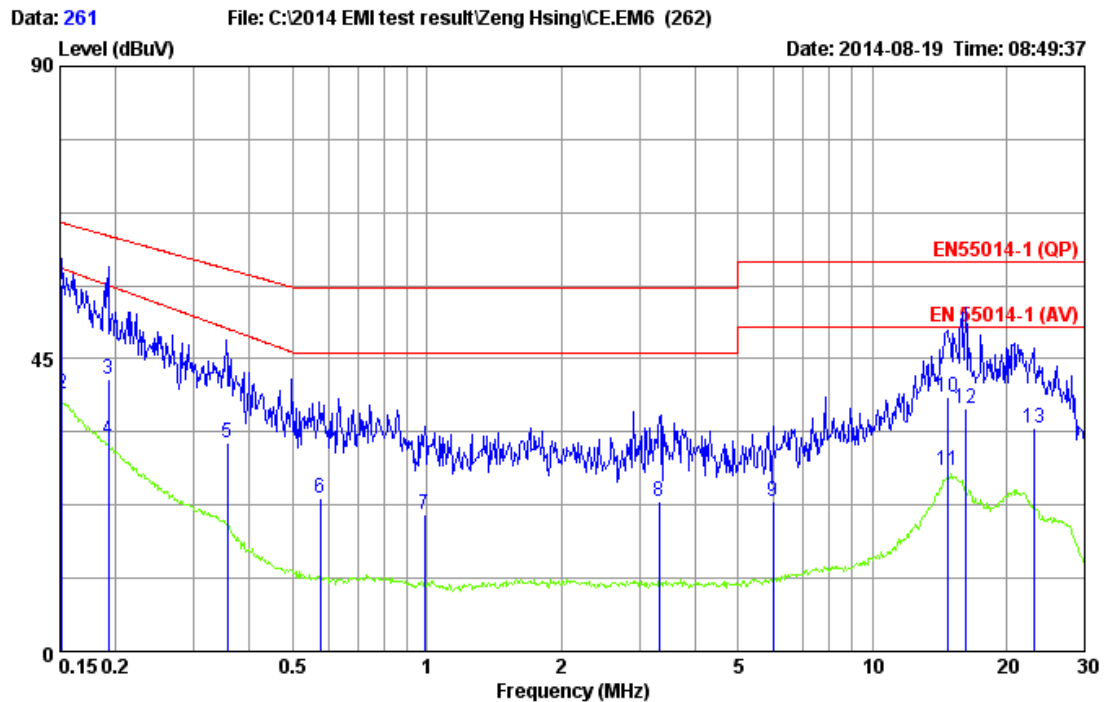
Site : TUV Rheinland Taichung Shielding Room
 Condition : EN55014-1 (QP) AC LISN - L LINE
 EUT : Household Sewing Machine
 MODEL : 8280A-L
 Op Condition : ON, Lowest Speed
 Power : AC 240V/50Hz
 Comment : Line

		Read		Limit	Over	
	Freq	Level	Factor	Level	Limit	Remark
	MHz	dBuV	dB	dBuV	dB	
1 q	0.150	63.14	0.11	63.25	66.00	-2.75 QP
2	0.151	62.98	0.11	63.09	65.96	-2.87 QP
3 a	0.151	38.18	0.11	38.29	58.94	-20.65 Average
4	0.168	59.39	0.11	59.50	65.08	-5.58 QP
5	0.168	35.05	0.11	35.16	57.80	-22.64 Average
6	0.240	49.64	0.11	49.75	62.08	-12.33 QP
7	0.582	35.03	0.12	35.15	56.00	-20.85 QP
8	1.010	31.14	0.13	31.27	56.00	-24.73 QP
9	2.012	29.38	0.16	29.54	56.00	-26.46 QP
10	5.419	26.86	0.22	27.08	60.00	-32.92 QP
11	10.342	24.99	0.28	25.27	60.00	-34.73 QP
12	14.907	34.94	0.77	35.71	60.00	-24.29 QP
13	24.142	30.31	1.10	31.41	60.00	-28.59 QP

Figure 2: Conducted Emission, AC Mains; 0.15 - 30 MHz; Lowest Speed (Line 2)


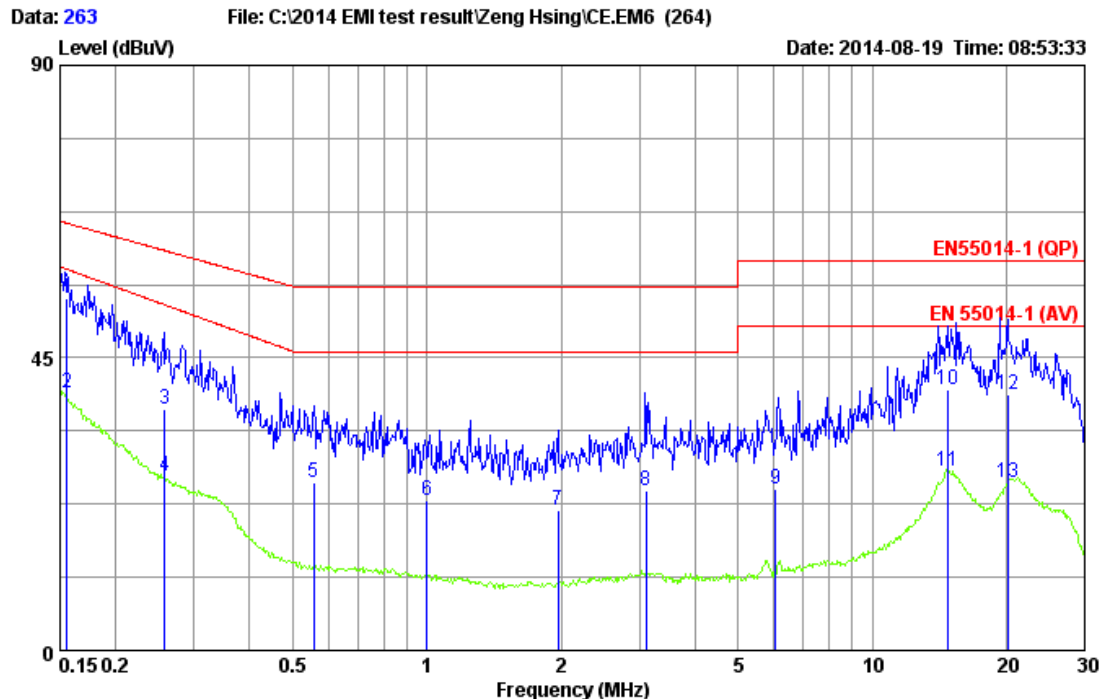
Site : TUV Rheinland Taichung Shielding Room
Condition : EN55014-1 (QP) AC LISN - N NEUTRAL
EUT : Household Sewing Machine
MODEL : 8280A-L
Op Condition : ON, Lowest Speed
Power : AC 240V/50Hz
Comment : Neutral

		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1	q	0.150	61.88	0.09	61.97	66.00 -4.03 QP
2		0.154	60.84	0.09	60.93	65.78 -4.85 QP
3	a	0.154	36.87	0.09	36.96	58.71 -21.75 Average
4		0.180	54.67	0.09	54.76	64.50 -9.74 QP
5		0.238	50.09	0.09	50.18	62.17 -11.99 QP
6		0.238	25.94	0.09	26.03	54.02 -27.99 Average
7		0.582	35.49	0.10	35.59	56.00 -20.41 QP
8		1.021	32.48	0.11	32.59	56.00 -23.41 QP
9		2.121	29.87	0.13	30.00	56.00 -26.00 QP
10		4.598	27.75	0.21	27.96	56.00 -28.04 QP
11		15.226	35.33	0.59	35.92	60.00 -24.08 QP
12		20.377	33.43	0.70	34.13	60.00 -25.87 QP
13		20.377	19.39	0.70	20.09	50.00 -29.91 Average

Figure 3: Conducted Emission, AC Mains; 0.15 - 30 MHz; Highest Speed (Line 1)


Site : TUV Rheinland Taichung Shielding Room
Condition : EN55014-1 (QP) AC LISN - L LINE
EUT : Household Sewing Machine
MODEL : 8280A-L
Op Condition : ON, Highest Speed
Power : AC 240V/50Hz
Comment : Line

		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1 q	0.152	56.19	0.11	56.30	65.91	-9.61 QP
2 a	0.152	39.43	0.11	39.54	58.89	-19.35 Average
3	0.192	41.65	0.11	41.76	63.93	-22.17 QP
4	0.192	32.36	0.11	32.47	56.31	-23.84 Average
5	0.356	31.86	0.12	31.98	58.83	-26.85 QP
6	0.576	23.53	0.12	23.65	56.00	-32.35 QP
7	0.989	20.88	0.13	21.01	56.00	-34.99 QP
8	3.328	22.99	0.20	23.19	56.00	-32.81 QP
9	5.993	22.94	0.22	23.16	60.00	-36.84 QP
10	14.828	38.35	0.76	39.11	60.00	-20.89 QP
11	14.828	27.07	0.76	27.83	50.00	-22.17 Average
12	16.226	36.54	0.86	37.40	60.00	-22.60 QP
13	23.018	33.19	1.10	34.29	60.00	-25.71 QP

Figure 4: Conducted Emission, AC Mains; 0.15 - 30 MHz; Highest Speed (Line 2)


Site : TUV Rheinland Taichung Shielding Room
Condition : EN55014-1 (QP) AC LISN - N NEUTRAL
EUT : Household Sewing Machine
MODEL : 8280A-L
Op Condition : ON, Highest Speed
Power : AC 240V/50Hz
Comment : Neutral

		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1 q	0.156	54.17	0.09	54.26	65.69	-11.43 QP
2 a	0.156	39.58	0.09	39.67	58.60	-18.93 Average
3	0.258	36.94	0.09	37.03	61.51	-24.48 QP
4	0.258	26.76	0.09	26.85	53.16	-26.31 Average
5	0.558	25.73	0.10	25.83	56.00	-30.17 QP
6	1.000	22.85	0.11	22.96	56.00	-33.04 QP
7	1.970	21.44	0.13	21.57	56.00	-34.43 QP
8	3.107	24.39	0.16	24.55	56.00	-31.45 QP
9	6.056	24.48	0.26	24.74	60.00	-35.26 QP
10	14.828	39.45	0.58	40.03	60.00	-19.97 QP
11	14.828	27.07	0.58	27.65	50.00	-22.35 Average
12	20.270	38.67	0.69	39.36	60.00	-20.64 QP
13	20.270	25.04	0.69	25.73	50.00	-24.27 Average

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Test Report No.

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4.1.2 Disturbance Power

Port: AC Mains
 Basic Standard: EN 55014-1, clause 4.1.2
 Frequency Range: 30 – 300 MHz
 Limits: Household appliances, Table 2

Result:
PASS

Test Setup

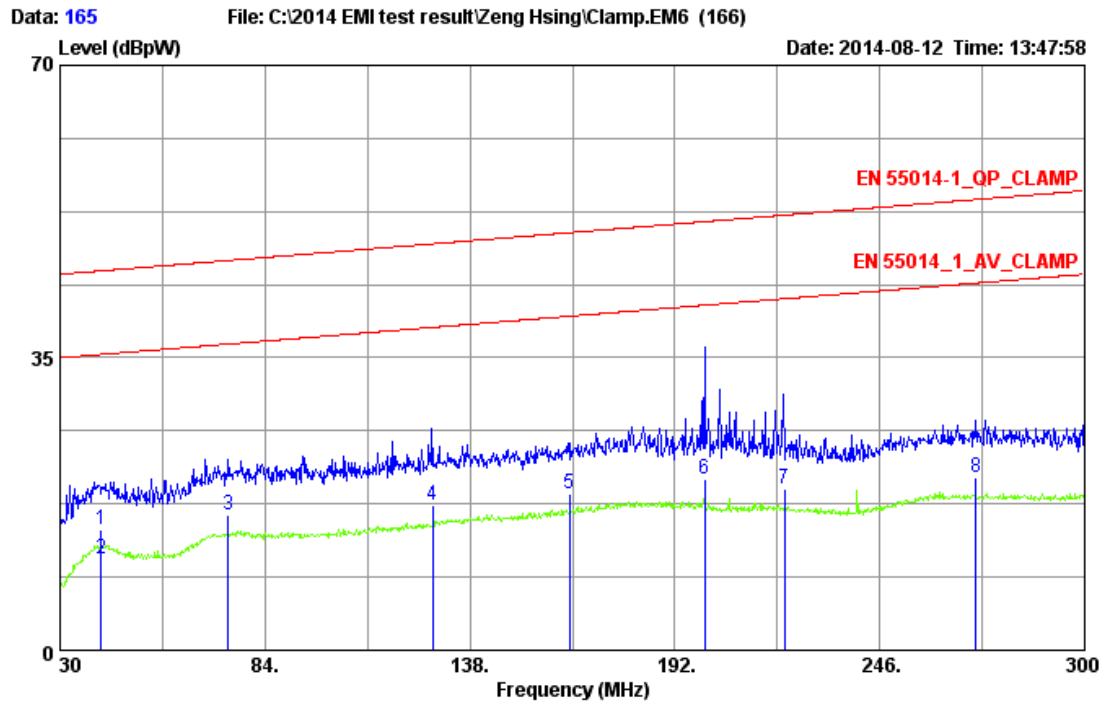
Date of Testing: Aug. 12, 2014
 Model: 8280A-L
 Input Voltage: AC 240V, 50Hz
 Operational Mode: ON, see 3.1
 Earthing: Not intended

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

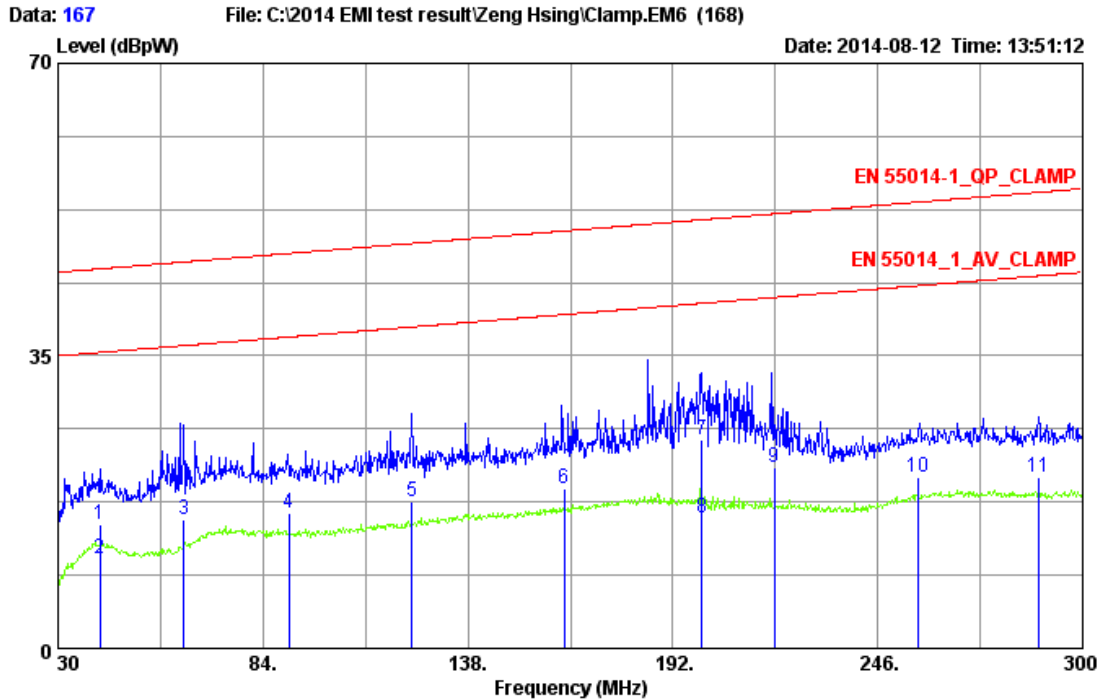
Figure 5: Disturbance Power, 30 – 300 MHz, AC Mains; Lowest Speed



Site : TUV Rheinland Taichung Shielding Room
Condition : EN 55014-1_QP_CLAMP
EUT : Household Sewing Machine
MODEL : 8280A-L
Op Condition : ON, Lowest Speed
Power : AC 240V/50Hz
Comment : For AC Mains

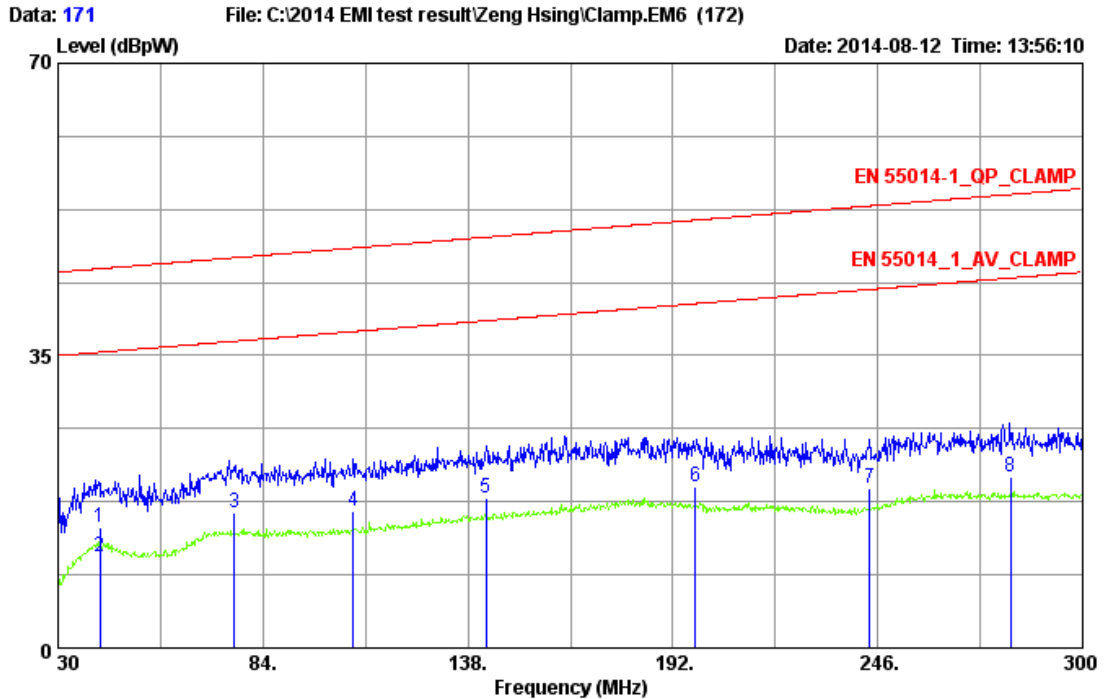
		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	
1	40.800	-1.06	15.51	14.45	45.40	-30.95	QP
2	40.800	-4.66	15.51	10.85	35.40	-24.55	Average
3	74.280	-1.54	17.73	16.19	46.64	-30.45	QP
4	128.280	-0.76	18.20	17.44	48.64	-31.20	QP
5	164.190	-0.39	19.06	18.67	49.97	-31.30	QP
6	199.830	0.77	19.69	20.46	51.29	-30.83	QP
7	220.890	0.22	19.09	19.31	52.07	-32.76	QP
8	271.380	0.76	19.82	20.58	53.94	-33.36	QP

Figure 6: Disturbance Power, 30 – 300 MHz, AC Mains; Highest Speed



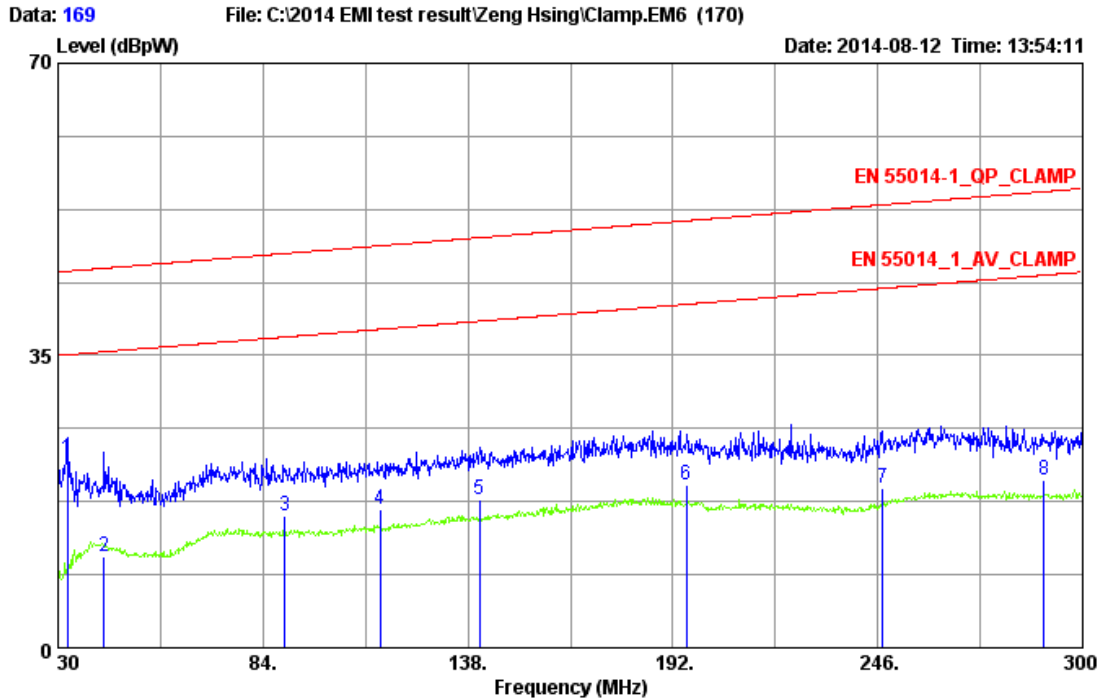
Site : TUV Rheinland Taichung Shielding Room
Condition : EN 55014-1_QP_CLAMP
EUT : Household Sewing Machine
MODEL : 8280A-L
Op Condition : ON, Highest Speed
Power : AC 240V/50Hz
Comment : For AC Mains

		Read		Limit	Over	
	Freq	Level	Factor	Level	Line	Limit Remark
	MHz	dBpW	dB	dBpW	dBpW	dB
1	41.070	-0.75	15.51	14.76	45.41	-30.65 QP
2 a	41.070	-4.73	15.51	10.78	35.41	-24.63 Average
3	63.210	-0.74	16.19	15.45	46.23	-30.78 QP
4	90.750	-1.45	17.57	16.12	47.25	-31.13 QP
5	123.150	-0.47	18.07	17.60	48.45	-30.85 QP
6	163.380	0.03	19.02	19.05	49.94	-30.89 QP
7 q	199.560	5.26	19.69	24.95	51.28	-26.33 QP
8	199.560	-4.11	19.69	15.58	41.28	-25.70 Average
9	218.730	2.52	19.13	21.65	51.99	-30.34 QP
10	256.800	0.98	19.49	20.47	53.40	-32.93 QP
11	288.390	0.53	19.95	20.48	54.57	-34.09 QP

Figure 7: Disturbance Power, 30 – 300 MHz, Foot Controller; Lowest Speed


Site : TUV Rheinland Taichung Shielding Room
 Condition : EN 55014-1_QP_CLAMP
 EUT : Household Sewing Machine
 MODEL : 8280A-L
 Op Condition : ON, Lowest Speed
 Power : AC 240V/50Hz
 Comment : For foot control cable

		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	
1	41.070	-1.01	15.51	14.50	45.41	-30.91	QP
2 a	41.070	-4.61	15.51	10.90	35.41	-24.51	Average
3 q	76.440	-1.52	17.75	16.23	46.72	-30.49	QP
4	107.760	-1.12	17.56	16.44	47.88	-31.44	QP
5	142.860	-0.66	18.55	17.89	49.18	-31.29	QP
6	197.940	-0.30	19.69	19.39	51.22	-31.83	QP
7	243.840	-0.05	19.10	19.05	52.92	-33.87	QP
8	281.100	0.42	19.98	20.40	54.30	-33.90	QP

Figure 8: Disturbance Power, 30 - 300 MHz, Foot Controller; Highest Speed


Site : TUV Rheinland Taichung Shielding Room
 Condition : EN 55014-1_QP_CLAMP
 EUT : Household Sewing Machine
 MODEL : 8280A-L
 Op Condition : ON, Highest Speed
 Power : AC 240V/50Hz
 Comment : For foot control cable

		Read			Limit	Over	
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBpW	dB	dBpW	dBpW	dB	
1	q	32.430	8.51	14.05	22.56	45.09	-22.53 QP
2	a	42.150	-4.62	15.53	10.91	35.45	-24.54 Average
3		89.670	-1.81	17.60	15.79	47.21	-31.42 QP
4		114.780	-1.15	17.81	16.66	48.14	-31.48 QP
5		140.970	-0.79	18.51	17.72	49.11	-31.39 QP
6		195.510	-0.27	19.69	19.42	51.13	-31.71 QP
7		247.350	-0.13	19.21	19.08	53.05	-33.97 QP
8		289.740	0.23	19.94	20.17	54.62	-34.45 QP

4.2 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

Result:	N/A
----------------	------------

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

4.3 Disturbances in supply systems

4.3.1 Harmonics

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

Result:	PASS
----------------	-------------

Test Setup

Date of Testing: Aug. 12, 2014
Model: 8280A-L
Input Voltage: AC 230V, 50Hz
Operational Mode: ON, see 3.1
Earthing: Not intended

Figure 9: Harmonics

TUV Rheinland Taiwan / EMC Service

Harmonics – Class A

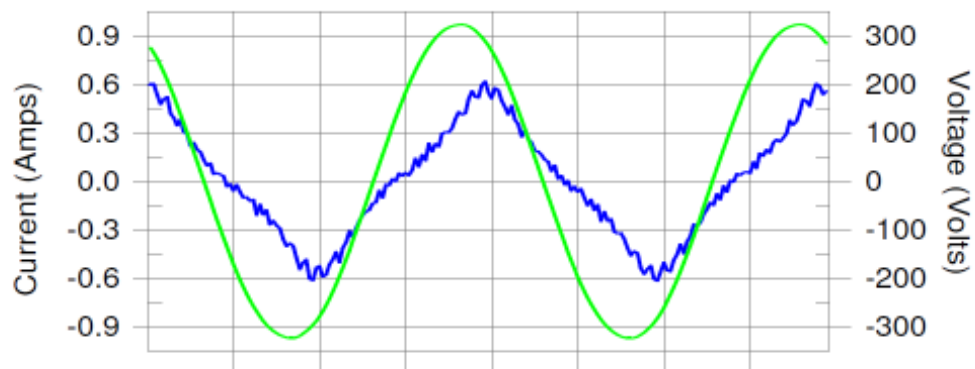
EUT: Household Sewing Machine 8280A-L
Test category: Class A (EN 61000-3-2)
Test date: 8/12/2014 **Start time:** 11:03:40 AM
Test duration (min): 3 **End time:** 11:07:01 AM
Comment: ON, Highest Speed **Data file name:** H-000437.cts_data
Customer:

Tested by: Lydia Chang

Test Margin: 100

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

Current & voltage waveforms



Harmonics and Class A limit line

European Limits

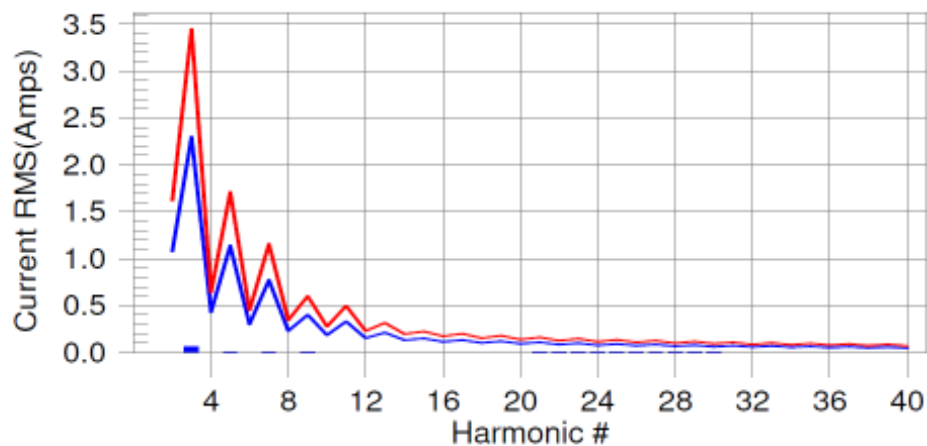

Test result: Pass **Worst harmonic was #28 with 10.27% of the limit.**

Table 4: Harmonics

TUV Rheinland Taiwan / EMC Service

Current Test Result Summary

EUT: Household Sewing Machine 8280A-L
Test category: Class A (EN 61000-3-2)
Test date: 8/12/2014
Test duration (min): 3
Comment: ON, Highest Speed
Customer:

Tested by: Lydia Chang
Test Margin: 100
End time: 11:07:01 AM
Data file name: H-000437.cts_data

Test Result: Pass Source qualification: Normal
THC(A): 0.05 I-THD(%): 16.43 POHC(A): 0.000 POHC Limit(A): 0.320
Highest parameter values during test:

V_RMS (Volts): 230.84	Frequency(Hz): 50.00
I_Peak (Amps): 0.644	I_RMS (Amps): 0.346
I_Fund (Amps): 0.330	Crest Factor: 1.935
Power (Watts): 68.7	Power Factor: 0.904

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000	1.080	0.0	0.001	1.620	0.04	Pass
3	0.049	2.300	2.1	0.058	3.450	1.68	Pass
4	0.000	0.430	0.0	0.000	0.645	0.06	Pass
5	0.006	1.140	0.5	0.008	1.710	0.47	Pass
6	0.002	0.300	0.0	0.002	0.450	0.44	Pass
7	0.002	0.770	0.0	0.003	1.155	0.27	Pass
8	0.000	0.230	0.0	0.001	0.345	0.27	Pass
9	0.002	0.400	0.0	0.003	0.600	0.50	Pass
10	0.000	0.184	0.0	0.000	0.276	0.12	Pass
11	0.001	0.330	0.0	0.002	0.495	0.40	Pass
12	0.000	0.153	0.0	0.001	0.230	0.26	Pass
13	0.001	0.210	0.0	0.001	0.315	0.45	Pass
14	0.000	0.131	0.0	0.000	0.197	0.18	Pass
15	0.001	0.150	0.0	0.001	0.225	0.31	Pass
16	0.000	0.115	0.0	0.000	0.173	0.29	Pass
17	0.001	0.132	0.0	0.001	0.199	0.46	Pass
18	0.000	0.102	0.0	0.000	0.153	0.28	Pass
19	0.000	0.118	0.0	0.001	0.178	0.41	Pass
20	0.000	0.092	0.0	0.001	0.138	0.46	Pass
21	0.001	0.107	0.0	0.002	0.161	1.32	Pass
22	0.000	0.084	0.0	0.002	0.125	1.74	Pass
23	0.001	0.098	0.0	0.005	0.147	3.38	Pass
24	0.001	0.077	0.0	0.005	0.115	4.31	Pass
25	0.002	0.090	2.7	0.008	0.135	6.04	Pass
26	0.003	0.071	3.7	0.011	0.106	10.00	Pass
27	0.002	0.083	2.9	0.010	0.125	7.99	Pass
28	0.002	0.066	3.4	0.010	0.099	10.27	Pass
29	0.001	0.078	0.0	0.004	0.116	3.15	Pass
30	0.001	0.061	0.0	0.004	0.092	4.24	Pass
31	0.001	0.073	0.0	0.002	0.109	1.73	Pass
32	0.000	0.058	0.0	0.001	0.086	1.64	Pass
33	0.000	0.068	0.0	0.001	0.102	0.69	Pass
34	0.000	0.054	0.0	0.001	0.081	0.64	Pass
35	0.000	0.064	0.0	0.001	0.096	0.70	Pass
36	0.000	0.051	0.0	0.001	0.077	0.71	Pass
37	0.000	0.061	0.0	0.001	0.091	0.70	Pass
38	0.000	0.048	0.0	0.001	0.073	0.80	Pass
39	0.000	0.058	0.0	0.001	0.087	0.70	Pass
40	0.000	0.046	0.0	0.000	0.069	0.68	Pass

4.3.2 Voltage Fluctuations

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

Result:**PASS**

Test Setup

Date of Testing: Aug. 12, 2014
Model: 8280A-L
Input Voltage: AC 230V, 50Hz
Operational Mode: ON, see 3.1
Earthing: Not intended

Table 5: Flicker

TUV Rheinland Taiwan / EMC Service

Flicker Test Summary per EN/IEC61000-3-3

EUT: Household Sewing Machine 8280A-L
Test category: dt,dmax,dc and Pst
Test date: 8/12/2014
Test duration (min): 10
Comment: ON, Highest Speed
Customer:

Tested by: Lydia Chang
Test Margin: 100
Start time: 11:09:08 AM
End time: 11:19:28 AM
Data file name: F-000438.cts_data

Test Result: Pass
Status: Test Completed
Pst and limit line

Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.90		
Highest dt (%):	-0.27	Test limit (%):	3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.19	Test limit (%):	3.30 Pass
Highest dmax (%):	-0.31	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.489	Test limit:	1.000 Pass

5 Test Results I M M U N I T Y

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
 Voltage: 8 kV (Air Discharge)
 4 kV (Contact Discharge)
 V.C.P and H.C.P.
 Test Level: (= level 3 of EN 61000-4-2)

Result:
PASS

Test Setup

Date of Testing: Aug. 12, 2014
 Model: 8280A-L
 Input Voltage: AC 240V, 50Hz
 Operational Mode: ON, see 3.1
 Earthing: Not intended
 Temperature: 24 °C
 Relative Humidity: 53 %
 Atmospheric pressure: 1003 mbar

Table 6: Electrostatic Discharge

Testpoint	Polarity	Number of Discharges	Observation	Result
Enclosure, seams	+/-8KV Air	20	normal function	PASS
Metal parts, screws	+/-4KV Con.	20	normal function	PASS
H.C.P. & V.C.P.	+/-4KV	20	normal function	PASS

No degradation in performance was monitored during and directly after the test.

5.2 Input and Output AC Power Ports

5.2.1 Conducted Disturbances induced by Current Injection

Port: AC mains input
 Basic Standard: EN 61000-4-6
 Performance Criteria: A
 Test Specification: EN 55014-2
 Frequency Range: 0.15 – 230MHz
 Voltage Level: 3Vrms (unmodulated)
 (= level 2 of EN 61000-4-6)
 Modulation: 1KHz, 80% AM

Result:
PASS

Test Setup

Date of Testing: Aug. 12, 2014
 Model: 8280A-L
 Input Voltage: AC 240V, 50Hz
 Operational Mode: ON, see 3.1
 Earthing: Not intended
 Temperature: 24 °C
 Relative Humidity: 53 %
 Atmospheric pressure: 1003 mbar

Table 7: Conducted Disturbances induced by Injected Current; 0.15 - 230 MHz

Settings

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

No degradation in performance was monitored during and directly after the test.

5.2.2 Fast Transients Common Mode

Port: AC mains input
Basic Standard: EN 61000-4-4
Performance Criteria: B
Test Specification: EN 55014-2
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: Aug. 12, 2014
Model: 8280A-L
Input Voltage: AC 240V, 50Hz
Operational Mode: ON, see 3.1
Earthing: Not intended
Temperature: 24 °C
Relative Humidity: 53 %
Atmospheric pressure: 1003 mbar

Table 8: Fast transients common mode (Input AC power port)

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

No degradation in performance was monitored during and directly after the test.

5.2.3 Surges

Port: AC mains input
 Basic Standard: EN 61000-4-5
 Performance Criteria: B
 Test Specification: EN 55014-2
 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 µs, (8/20) µs

Result:
PASS

Test Setup

Date of Testing: Aug. 12, 2014
 Model: 8280A-L
 Input Voltage: AC 240V, 50Hz
 Operational Mode: ON, see 3.1
 Earthing: Not intended
 Temperature: 24 °C
 Relative Humidity: 53 %
 Atmospheric pressure: 1003 mbar

Table 9: Surges Differential Mode (Input AC Power Port)

Testpoint	Voltage	Polarity	No. of Pulse	Phase	Observation
L-N	1KV	+/-	10	0°, 90°, 180°, 270°	Normal function

No degradation in performance was monitored 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
Test Level: 0 % U_T for Interruptions,
40 % & 70 % U_T for Dips.

Result:	PASS
----------------	-------------

Test Setup

Date of Testing: Aug. 12, 2014
Model: 8280A-L
Input Voltage: AC 240V, 50Hz
Operational Mode: ON, see 3.1
Earthing: Not intended
Temperature: 24 °C
Relative Humidity: 53 %
Atmospheric pressure: 1003 mbar

Table 10: Voltage Dips and Interruptions (Input AC Power Port)

Voltage Dips	Duration	Observation	Result
0%	0.5 cys	Normal operation	PASS
40%	10 cys	Motor speed became slower, but the EUT was self-recoverable.	PASS
70%	25 cys	Motor speed became slower, but the EUT was self-recoverable.	PASS

No degradation in performance was monitored during and directly after the test.

6 Photographs of Test Setup



Picture 1: Test setup for Conducted Emission



Picture 2: Test setup for Disturbance Power



Picture 3: Test setup for Harmonics and Flicker



Picture 4: Test setup for Electrostatic Discharge



Picture 5: Test setup for Electrical Fast Transient



Picture 6: Test setup for Surge



Picture 7: Test setup for Conducted Susceptibility



Picture 8: Test setup for Voltage Dips and Interruptions

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