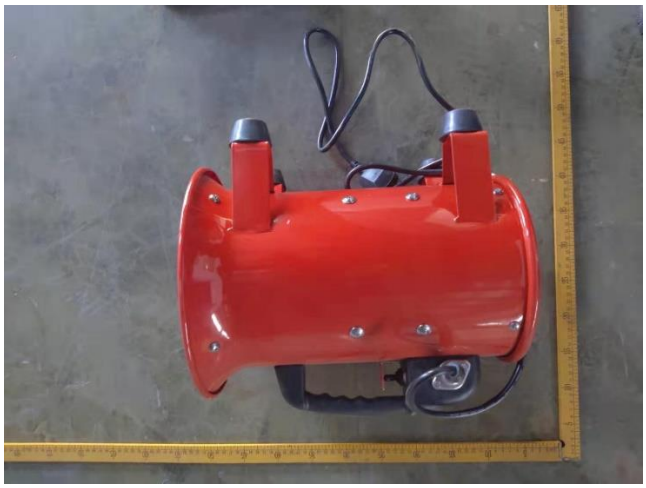
Prüfbericht-Nr.: *Test Report No.*:	**CN208A1Z 001**	**Auftrags-Nr.:** *Order No.*:	180196631	Seite 1 von 34 *Page 1 of 34*
Kunden-Referenz-Nr.: *Client Reference No.*:	N/A	**Auftragsdatum:** *Order date*:	2020-12-22	
Auftraggeber: *Client*:	SHENLI FAN CO.,LTD / Wenbing Road, Guanlu Village, Zeguo Town, Wenling City, 317523 Zhejiang P.R. China			
Prüfgegenstand: *Test item*:	AIR-VENTILATION FAN			
Bezeichnung / Typ-Nr.: *Identification / Type No.*:	CTF-x, BTF-x, CTF-I-y x=20, 25, 30, 35, 40, 40-2, 45, 45-2, 50, 50-2, 60, 70, 80; y=24, 28, 32, 36, 42			
Auftrags-Inhalt: *Order content*:	CE LVD			
Prüfgrundlage: *Test specification*:	EN 60034-1:2010 EN 60034-5:2001+A1:2007			

Wareneingangsdatum: *Date of receipt*:	2020-12-04
Prüfmuster-Nr.: *Test sample No.*:	A002983342-001 #1 - #2
Prüfzeitraum: *Testing period*:	2020-12-18 – 2020-12-24
Ort der Prüfung: *Place of testing*:	See page 2 of test report
Prüflaboratorium: *Testing laboratory*:	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Prüfergebnis*: *Test result**:	Pass



geprüft von / *tested by*:

2021-01-21	Perry Ding / PE	Perry Ding
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by*:

2021-01-21	Jane Hu / TC	Jane Hu
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other*:
The test report includes three parts: test report of EN 60034-1 (page 2 to page 27), test report of EN 60034-5 (page 28 to page 33), list of electrical material and components (page 34).
Attachment 1: EMC report (16 pages).

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 specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

V04

TEST REPORT **EN 60034-1** **Rotating electrical machines - Part 1: Rating and performance**	
Report Reference No. ..... :	**CN208A1Z 001**
Date of issue ..... :	See cover page
Total number of pages..... :	See cover page
Testing laboratory ..... :	**TÜV Rheinland / CCIC (Ningbo) Co., Ltd.**
Address ..... :	3F, Building C13, R&D Park, No,32, Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo 315048, P.R. China
Testing location..... :	**Zhejiang Testing & Inspection Institute for Mechanical and Electrical Products Quality Co., Ltd** 28th Chuangye Street, QingShan Lake, LinAn, Zhejiang, P.R. China **TÜV Rheinland / CCIC (Ningbo) Co., Ltd.** 1st Floor, Building 11, Scholar Innovation Park, No.1188 Zhongguan Road, Zhenhai District, Ningbo 315200 P.R. China
Client..... :	**SHENLI FAN CO.,LTD**
Address ..... :	Wenbing Road, Guanlu Village, Zeguo Town, Wenling City, 317523 Zhejiang P.R. China
Standard..... :	EN 60034-1: 2010
Test procedure ..... :	Type test
Procedure deviation..... :	N/A
Non-standard test method..... :	N/A
Test Report Form No. ..... :	EN 60034-1/ 2010
Test item	
Kind of machine ..... :	AIR-VENTILATION FAN
Trademark..... :	N/A
Model and/or type reference ..... :	CTF-x, BTF-x, CTF-I-y x=20, 25, 30, 35, 40, 40-2, 45, 45-2, 50, 50-2, 60, 70, 80; y=24, 28, 32, 36, 42
Manufacturer..... :	**SHENLI FAN CO.,LTD** Wenbing Road, Guanlu Village, Zeguo Town, Wenling City, 317523 Zhejiang P.R. China
Factory ..... :	**SHENLI FAN CO.,LTD** Wenbing Road, Guanlu Village, Zeguo Town, Wenling City, 317523 Zhejiang P.R. China
Rated voltage(s) (V)..... :	AC 220 – 240V
Rated frequency (Hz)..... :	50Hz
Rated output (kW)..... :	See “General product information”

Particulars: test item vs. test requirements	
Duty class	S1
Cycling duration factor	N/A
Class of equipment	Class I equipment
Locked-rotor torque	N/A
Locked-rotor current	N/A
Pull-up torque	N/A
Breakdown torque	N/A
Rated speed	See “General product information”
Thermal classification according to IEC 62114	Class F
Type of cooling	IC411 according to EN 60034-6
Primary coolant	Air
Secondary coolant	Air
Maximum ambient air temperature (°C)	60°C
Altitude above sea level (m)	1000m
IP degree of machine	IP55
IP degree of fan	IP20
Mass of equipment (kg)	See “General product information”

Test case verdicts	
Test case does not apply to the test object	N/A
Test item does meet the requirement	P(ass)
Test item does not meet the requirement	F(ail)

General remarks:

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a period is used as the decimal separator.

Summary of test:

The test objects are AIR-VENTILATION FANs, which are named CTF series, CTF-I series and BTF series. Among these series, they are of same construction except different power and physical size. Therefore, select the model type CTF-80 and CTF-I-42 for testing. All relevant tests were passed.

The EMC test was carried out on model CTF-80.

All motors windings of the types below are made of copper.

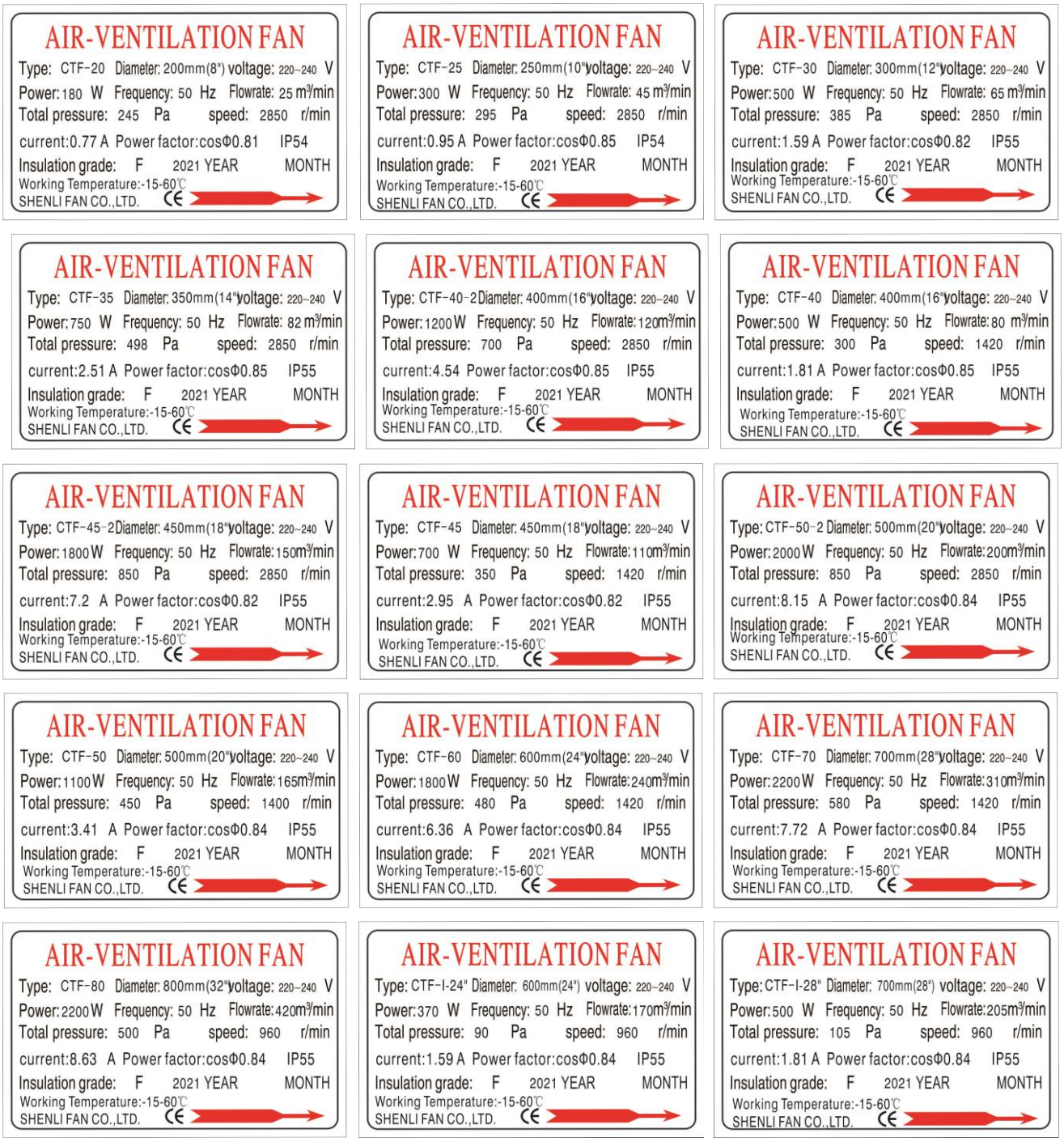
General product information:

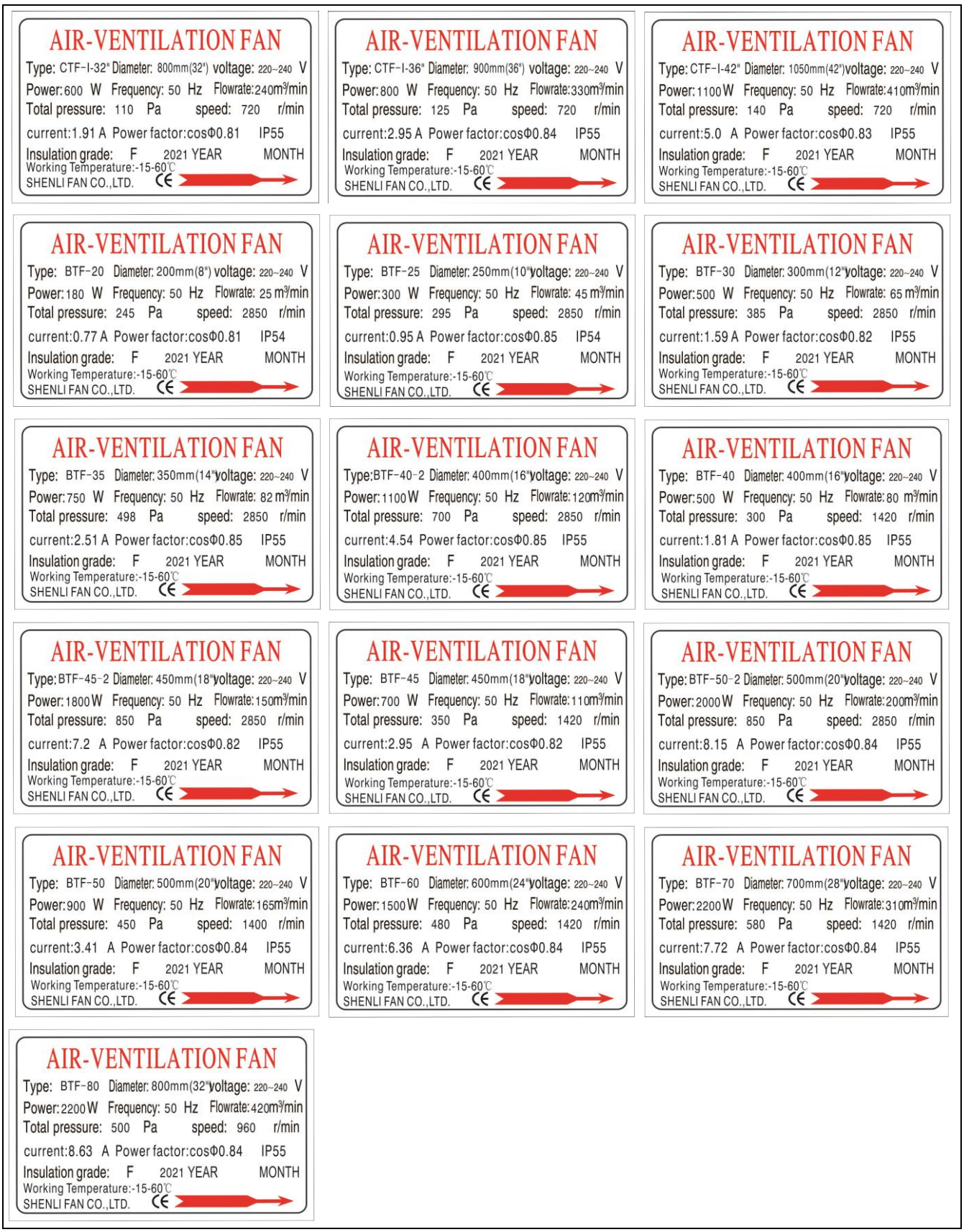
Type	No. of phases	IP code	Thermal class	Rated voltage (V)	Rated frequency (Hz)	Rated current (A)	Rated speed (r/min)	Rated power factor
CTF-20	Single	IP55	F	220 – 240	50	0,77	2850	0,81
CTF-25	Single	IP55	F	220 – 240	50	0,95	2850	0,85
CTF-30	Single	IP55	F	220 – 240	50	1,59	2850	0,82
CTF-35	Single	IP55	F	220 – 240	50	2,51	2850	0,85
CTF-40	Single	IP55	F	220 – 240	50	1,81	1420	0,85
CTF-40-2	Single	IP55	F	220 – 240	50	4,54	2850	0,85
CTF-45	Single	IP55	F	220 – 240	50	2,95	1420	0,82
CTF-45-2	Single	IP55	F	220 – 240	50	7,2	2850	0,82
CTF-50	Single	IP55	F	220 – 240	50	3,41	1400	0,84
CTF-50-2	Single	IP55	F	220 – 240	50	8,15	2850	0,84
CTF-60	Single	IP55	F	220 – 240	50	6,36	1420	0,84
CTF-70	Single	IP55	F	220 – 240	50	7,72	1420	0,84
CTF-80	Single	IP55	F	220 – 240	50	8,63	960	0,84
CTF-I-24	Single	IP55	F	220 – 240	50	1,59	960	0,84
CTF-I-28	Single	IP55	F	220 – 240	50	1,81	960	0,84
CTF-I-32	Single	IP55	F	220 – 240	50	1,91	720	0,81
CTF-I-36	Single	IP55	F	220 – 240	50	2,95	720	0,84
CTF-I-42	Single	IP55	F	220 – 240	50	5,0	720	0,83
BTF-20	Single	IP55	F	220 – 240	50	0,77	2850	0,81
BTF-25	Single	IP55	F	220 – 240	50	0,95	2850	0,85
BTF-30	Single	IP55	F	220 – 240	50	1,59	2850	0,82
BTF-35	Single	IP55	F	220 – 240	50	2,51	2850	0,85
BTF-40	Single	IP55	F	220 – 240	50	1,81	1420	0,85

BTF-40-2	Single	IP55	F	220 – 240	50	4,54	2850	0,85
BTF-45	Single	IP55	F	220 – 240	50	2,95	1420	0,82
BTF-45-2	Single	IP55	F	220 – 240	50	7,2	2850	0,82
BTF-50	Single	IP55	F	220 – 240	50	3,41	1400	0,84
BTF-50-2	Single	IP55	F	220 – 240	50	8,15	2850	0,84
BTF-60	Single	IP55	F	220 – 240	50	6,36	1420	0,84
BTF-70	Single	IP55	F	220 – 240	50	7,72	1420	0,84
BTF-80	Single	IP55	F	220 – 240	50	8,63	960	0,84

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.




AIR-VENTILATION FAN
Type: CTF-I-32" Diameter: 800mm(32") voltage: 220~240 V
Power: 600 W Frequency: 50 Hz Flowrate: 240m³/min
Total pressure: 110 Pa speed: 720 r/min
current:1.91 A Power factor:cosΦ0.81 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: CTF-I-36" Diameter: 900mm(36") voltage: 220~240 V
Power: 800 W Frequency: 50 Hz Flowrate: 330m³/min
Total pressure: 125 Pa speed: 720 r/min
current:2.95 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: CTF-I-42" Diameter: 1050mm(42") voltage: 220~240 V
Power: 1100 W Frequency: 50 Hz Flowrate: 410m³/min
Total pressure: 140 Pa speed: 720 r/min
current:5.0 A Power factor:cosΦ0.83 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-20 Diameter: 200mm(8") voltage: 220~240 V
Power: 180 W Frequency: 50 Hz Flowrate: 25 m³/min
Total pressure: 245 Pa speed: 2850 r/min
current:0.77 A Power factor:cosΦ0.81 IP54
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-25 Diameter: 250mm(10") voltage: 220~240 V
Power: 300 W Frequency: 50 Hz Flowrate: 45 m³/min
Total pressure: 295 Pa speed: 2850 r/min
current:0.95 A Power factor:cosΦ0.85 IP54
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-30 Diameter: 300mm(12") voltage: 220~240 V
Power: 500 W Frequency: 50 Hz Flowrate: 65 m³/min
Total pressure: 385 Pa speed: 2850 r/min
current:1.59 A Power factor:cosΦ0.82 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-35 Diameter: 350mm(14") voltage: 220~240 V
Power: 750 W Frequency: 50 Hz Flowrate: 82 m³/min
Total pressure: 498 Pa speed: 2850 r/min
current:2.51 A Power factor:cosΦ0.85 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type:BTF-40-2 Diameter: 400mm(16") voltage: 220~240 V
Power: 1100 W Frequency: 50 Hz Flowrate: 120m³/min
Total pressure: 700 Pa speed: 2850 r/min
current:4.54 Power factor:cosΦ0.85 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-40 Diameter: 400mm(16") voltage: 220~240 V
Power: 500 W Frequency: 50 Hz Flowrate: 80 m³/min
Total pressure: 300 Pa speed: 1420 r/min
current:1.81 A Power factor:cosΦ0.85 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-45-2 Diameter: 450mm(18") voltage: 220~240 V
Power: 1800 W Frequency: 50 Hz Flowrate: 150m³/min
Total pressure: 850 Pa speed: 2850 r/min
current:7.2 A Power factor:cosΦ0.82 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-45 Diameter: 450mm(18") voltage: 220~240 V
Power: 700 W Frequency: 50 Hz Flowrate: 110m³/min
Total pressure: 350 Pa speed: 1420 r/min
current:2.95 A Power factor:cosΦ0.82 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-50-2 Diameter: 500mm(20") voltage: 220~240 V
Power: 2000 W Frequency: 50 Hz Flowrate: 200m³/min
Total pressure: 850 Pa speed: 2850 r/min
current:8.15 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-50 Diameter: 500mm(20") voltage: 220~240 V
Power: 900 W Frequency: 50 Hz Flowrate: 165m³/min
Total pressure: 450 Pa speed: 1400 r/min
current:3.41 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-60 Diameter: 600mm(24") voltage: 220~240 V
Power: 1500 W Frequency: 50 Hz Flowrate: 240m³/min
Total pressure: 480 Pa speed: 1420 r/min
current:6.36 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-70 Diameter: 700mm(28") voltage: 220~240 V
Power: 2200 W Frequency: 50 Hz Flowrate: 310m³/min
Total pressure: 580 Pa speed: 1420 r/min
current:7.72 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.
AIR-VENTILATION FAN
Type: BTF-80 Diameter: 800mm(32") voltage: 220~240 V
Power: 2200 W Frequency: 50 Hz Flowrate: 420m³/min
Total pressure: 500 Pa speed: 960 r/min
current:8.63 A Power factor:cosΦ0.84 IP55
Insulation grade: F 2021 YEAR MONTH
Working Temperature:-15-60℃
SHENLI FAN CO.,LTD.

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict

4	**DUTY**		**P**
4.1	Declaration of duty		P
	Purchasers declaration of duty		N/A
	If duty not declared, S1	S1	P
4.2	Duty types		P
4.2.1	Duty type S1 – Continuous running duty	S1	P
4.2.2	Duty type S2 – Short-time duty		N/A
4.2.3	Duty type S3 – Intermittent periodic duty		N/A
4.2.4	Duty type S4 – Intermittent periodic duty with starting		N/A
4.2.5	Duty type S5 – Intermittent periodic duty with electric braking		N/A
4.2.6	Duty type S6 – Continuous-operation periodic duty		N/A
4.2.7	Duty type S7 – Continuous-operation periodic duty with electric breaking		N/A
4.2.8	Duty type S8 – Continuous-operation periodic duty with related load/speed changes		N/A
4.2.9	Duty type S9 – Duty with non-periodic load and speed variations		N/A
4.2.10	Duty type S10 – Duty with discrete constant loads and speeds		N/A

5	**RATING**		**P**
5.1	Assignment of rating		P
	Rating assigned by manufacturer		P
5.2	Classes of rating		P
5.2.1	Rating for continuous running duty	S1	P
5.2.2	Rating for short-time duty		N/A
5.2.3	Rating for periodic duty		N/A
5.2.4	Rating for non-periodic duty		N/A
5.2.5	Rating for duty with discrete constant loads and speeds		N/A
5.2.6	Rating for equivalent loading		N/A
5.3	Selection of a class of rating		P
	General purpose machine has rating for		N/A

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict
	continuous running duty		
	If duty not specified by purchaser S1 applies	S1	P
	Short-time duty, S2 applies		N/A
	Varying loads and no-load, S3 to S8 applies		N/A
	Non-periodical variable loads at variable speeds, S9 applies		N/A
	Discrete constant loads, S10 applies		N/A
5.4	Allocation of outputs to class of rating		P
	For duty types S1 to S8, specified value(s) of constant load(s) shall be the rated output(s)	S1	P
	For duty types S9 and S10, the reference value of the load based on duty type S1 shall be taken as the rated output		N/A
5.5	Rated output		P
5.5.1	DC generators		N/A
	The rated output is output at the terminals (W)..... :		-
5.5.2	AC generators		N/A
	The rated output apparent power at the terminals (VA) ..... :		-
	Power factor..... :		-
	Rated power factor for synchronous generators 0.8 lagging (over-exited)		N/A
5.5.3	Motors		P
	The rated output is mechanical power at shaft (W) :	See appended table 1	
5.5.4	Synchronous condensers		N/A
	The rated output is reactive power at the terminals (var)..... :		-
5.6	Rated voltage		N/A
5.6.1	DC generators		N/A
	For small range of voltage, rated output and output factor applies at any voltage within range		N/A
5.6.2	AC generators		N/A
	Small range of voltage, rated output and output factor applying at any voltage within range		N/A
5.7	Coordination of voltages and outputs		N/A

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict
	For machines with rated voltages above 1 kV, preferred rated voltages are selected according to rated output as stated in table		N/A
5.8	Machines with more than one rating		N/A
	Complying with standard in all respects at each rating		N/A
	Multi-speed motors, a rating shall be assigned for each speed		N/A
	For varying rated quantities rating s stated at limits		N/A
6	**SITE OPERATING CONDITIONS**		**P**
6.1	General		P
	Machine suitable for operating conditions as stated in section 5		P
6.2	Altitude		P
	Not exceeding 1 000 m		P
6.3	Maximum ambient air temperature		N/A
	Not exceeding +40 °C		N/A
6.4	Minimum ambient air temperature		P
	Not less than –15 °C		P
	Not less than 0 °C if one or more exceptions apply		P
6.5	Water coolant temperature		N/A
	Not exceeding +25 °C and not be less than +5 °C		N/A
6.6	Storage and transport		N/A
	Minimum specified temperature if different from that in 6.4 (°C) ..... :		-
6.7	Purity of hydrogen coolant		N/A
	Operation at hydrogen content of ≥ 95 %		N/A
7	**ELECTRICAL OPERATING CONDITIONS**		**P**
7.1	Electrical supply		N/A
	Rated voltage of three-phase machines derived from IEC 60038	Single-phase fans	N/A

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict
7.2	Form and symmetry of voltages and currents		P
7.2.1	AC motors		P
7.2.1.1	AC motors supplied from power supply (AC generator) of fixed frequency suitable for operation on supply voltage having harmonic voltage factor not exceeding:		P
	0.02 for single and three phase motors		P
	0.03 for design N motors		N/A
7.2.1.2	AC motors supplied from static converters		N/A
7.2.2	AC generators		N/A
	Complying with requirements		N/A
7.2.3	Synchronous machines		N/A
	Maximum I_2/I_N value for continuous operation ..... :		-
	Maximum $(I_2/I_N)^2$ x t in seconds at single fault condition ..... :		-
7.2.4	DC motors supplied from static power converters		N/A
	Complying with requirements		N/A
7.3	Voltage and frequency variations during operation		P
	Figure 11 used for generators and synchronous condensers		N/A
	Figure 12 used for motors		P
	Machine capable of performing its primary function within Zone A	The max. temperature rise within zone A: Max. Winding: 36,9K(S1) is less than limit value 85K (Class F)	P
	Machine capable of performing its primary function within Zone B with deviations		P
7.4	Three-phase AC machines operating on unearthed systems		N/A
	Machine able to operate at earthed neutral		N/A
	Machine able to operate at unearthed systems with one line at earth potential for short duration		N/A
7.5	Voltage (peak and gradient) withstand levels		N/A

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict
	Limiting value for peak voltage (V) ..... :	Intended to directly connected the power distribution system and not recommended supplied by electronic converter, no special value for this limiting.	-
	Limiting value for voltage gradient ..... :		-
	For cage induction motors within the scope of IEC 60034-12		N/A
	For high-voltage a.c. motor		N/A
8	**THERMAL PERFORMANCE AND TESTS**		**P**
8.1	Thermal class		P
	A thermal class in according with IEC 60085 shall be assigned to the insulation systems ..... :	Class F	-
8.2	Reference coolant		P
	Primary coolant..... :	Air	-
	Method of cooling ..... :	Indirect	-
	Secondary coolant..... :	Air	-
	Table number..... :	7	-
8.3	Conditions for thermal tests		P
8.3.1	Electrical supply		P
	Complying with requirements		P
8.3.2	Temperature of machine before test		P
	Temperature of winding measured before the test shall not different from the coolant temperature by more than 2K		P
	For short-time rating (S2) temperature of winding measured before the test within 5 K of coolant temperature	S1	N/A
8.3.3	Temperature of coolant		P
	Temperature of primary coolant (°C) ..... :	See appended table	-
	Temperature of secondary coolant (°C) ..... :	None	-
8.3.4	Measurement of coolant temperature during test		P
	Mean value of readings during last quarter taken as value; variations of temperature of coolant minimized		P

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.4.1	Open machines or closed machines without heat exchangers (cooled by surrounding ambient air or gas)		P
	Several detectors placed around the machine at halfway at distance of 1 m to 2 m; detectors protected from radiant heat and draught		P
8.3.4.2	Machines cooled by air or gas from a remote source through ventilation ducts and machines with separately mounted heat exchangers		N/A
	Temperature of the primary coolant measured where it enters the machine		N/A
8.3.4.3	Closed machines with machine-mounted or internal heat exchangers		N/A
	Temperature of primary coolant measured where it enters the machine; for machines having water-cooled or air-cooled heat exchangers, temperature of secondary coolant measured where it enters the heat exchanger		N/A
8.4	Temperature rise of a part of a machine		P
	Temperature measured at the end of the test		P
8.5	Methods of measurement of temperature		P
	Recognized method used	See 8.6	P
8.6	Determination of winding temperature		P
8.6.1	Choice of method		P
	Rated output (W or VA) ..... :	See appended table	-
	Method for measuring winding temperature ..... :	Resistance method	-
	Thermometer method only used in following cases:		P
	a) When it is not practicable to determine the temperature rise by resistance method		P
	b) Single layer windings, rotating or stationary.		P
	c) During routine tests on machines manufactured in large numbers		P
	d) If purchaser wishes to have thermometer reading in addition to values determined by resistance or ETD method		P
8.6.2	Determination by resistance method		P
8.6.2.1	Measurement		P
	One of following methods used:		P
	Direct measurement		P
	Measurement by DC current/voltage		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Superstition method		N/A
8.6.2.2	Calculation		P
	Temperature (θ_1) of winding (cold) at moment of initial resistance measurement (°C) ..... :	See appended table	-
	Temperature (θ_a) of coolant at end of test (°C) ..... :	See appended table	-
	Resistance (R_1) of winding (cold) at temperature θ_1 (Ω) ..... :	See appended table	-
	Resistance (R_2) of winding (hot) at end of test / at temperature θ_2 (Ω) ..... :	See appended table	-
	Reciprocal of temperature coefficient (k) ..... :	235 for copper	-
	Temperature rise (θ_2 - θ_a) (K) ..... :	See appended table	
8.6.2.3	Correction for stopping time		P
8.6.2.3.1	General		P
8.6.2.3.2	Short stopping time		P
	Initial reading obtained within time interval specified in table 5		P
8.6.2.3.3	Extended stopping time		N/A
	Initial reading obtained within twice the time interval specified in table 5		N/A
	Value at time of shutdown determined through extrapolation		N/A
8.6.2.3.4	Windings with one coil-side per slot		N/A
	Direct measurement only used if machine comes to stop within time interval specified in table 5		N/A
8.6.3	Determination by ETD method		N/A
8.6.3.1	General		N/A
8.6.3.2	Two or more coil-sides per slot		N/A
	Detectors located between insulated coil-sides within slot in positions which highest temperature are likely to occur	ETD method was not used	N/A
8.6.3.3	One coil-side per slot		N/A
	Detectors located between wedge and outside of winding insulation in positions which highest temperature are likely to occur		N/A
8.6.3.4	End windings		N/A
	Detectors located between two adjacent coil-sides within end windings in positions where highest temperature are likely to occur; sensing		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	point in close contact with surface of coil-side and adequately protected against influence of coolant		
8.6.4	Determination by thermometer method		P
	Thermometer placed at hottest accessible spot		P
8.7	Duration of thermal tests		P
8.7.1	Rating for continuous running duty		P
	Test continued until thermal equilibrium has been reached	Test continued until temperature did not vary by more than 2K/h	P
8.7.2	Rating for short-time duty		N/A
	Test duration as specified in rating		N/A
8.7.3	Rating for periodic duty		N/A
	Rated for equivalent loading applied until thermal equilibrium has been reached		N/A
	Test on actual duty load cycle and continued until practically identical temperature cycles are obtained		N/A
8.7.4	Rating for non-periodic duty and for duty with discrete constant loads		N/A
	Rated for equivalent loading applied until thermal equilibrium has been reached		N/A
8.8	Determination of the thermal equivalent time constant for machines of duty type S9		N/A
	Thermal equivalent time constant determined from plotted cooling curve		N/A
8.9	Measurement of bearing temperature		P
	Thermometer method or ETD method used	Thermometer method	P
	Measuring point for as near as possible to one of the two locations specified in table 6		P
	Thermal resistance between temperature detector and object minimized		P
8.10	Limits of temperature and temperature rise		P
8.10.1	Indirect cooled windings		P
	Temperature rises not exceeding limits of Table 7(air coolant) or Table 8(hydrogen coolant)	Limit of table 7 not exceeded	P
	Temperature rise limit according to table 7 or 8 (K) ..... :	85°K (class F)	-
	Measured / calculated temperature rise according to 8.6 (K) ..... :	See appended table	

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Clause	Requirement - Test	Result - Remark	Verdict
	For other operating site conditions, ratings other than continuous running duty, rated voltages greater than 12 000 V, limits adjusted according to table 9 and 10	Ordinary operating conditions	N/A
	For test site conditions differing from operating site conditions, limits adjusted according to table 11	Not differing extensively	N/A
8.10.2	Direct cooled windings		N/A
	Temperatures not exceeding limits of table 12		N/A
	For other operating site conditions limits adjusted according to table 13		N/A
	For test site conditions differing from operating site conditions, limits adjusted according to table 14		N/A
8.10.3	Adjustment to take account of hydrogen purity on test		N/A
	Hydrogen content between 95 - 100 %		N/A
8.10.4	Permanently short-circuited windings, magnetic cores and all structural components (other than bearings) whether or not in contact with insulation		N/A
	Temperature rise / Temperature not detrimental to insulation	No excessive temperature rises/ temperatures determined to be expected	N/A
8.10.5	Commutators and sliprings, open or enclosed and their brushes and brush gear		N/A
	Temperature rise / Temperature not detrimental to insulation	No such construction	N/A
	Temperature rise / Temperature not exceeding that at which combination of brush grade and commutator or slipring material can handle current over full operating range		N/A
9	**OTHER PERFORMANCE AND TESTS**		**P**
9.1	Routine tests		N/A
9.2	Dielectric tests		P
9.2.1	High-voltage test applied between windings under test and frame of machine		P
	Dielectric test carried out immediately after the thermal test		P
	Polyphase machines with rated voltages above 1 kV having both ends of each phase individually accessible, test carried out for each phase		N/A
	Test voltage applied for 1 min	1min	P

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Clause	Requirement - Test	Result - Remark	Verdict
	Test voltage (V) ..... :	Between winding and enclosure: 1500V	-
9.2.2	Bars and coils of high voltage machines tested according to EN 50209 and EN 60034-15		N/A
9.3	Occasional excess current		N/A
9.3.1	General		N/A
9.3.2	Generators		N/A
	AC generators with output not exceeding 1 200 MVA capable of withstanding current of 1.5 times rated current for 30 s		N/A
	AC generators with output exceeding 1 200 MVA capable of withstanding current of 1.5 times rated current for at least 15 s		N/A
9.3.3	AC motors (except commutator motors and permanent magnet motors)		N/A
	Three-phase AC motors having rated outputs not exceeding 315 kW and rated voltages not exceeding 1 kV capable of withstanding current equal to 1.5 times rated current for not less than 2 min		N/A
9.3.4	Commutator machines		N/A
	Capable of withstanding 1.5 times rated current for 60 s for specified conditions		N/A
9.4	Momentary excess torque for motors		N/A
9.4.1	Polyphase induction motors and DC motors (excluding motors for specific applications)		N/A
	Capable of withstanding for 15 s excess torque of 60 % of rated torque; motor for duty type S9 capable of withstanding momentarily excess torque determined according to duty specified		N/A
	Rated torque (Nm)..... :		-
	Excess torque (Nm)..... :		-
	Induction motors for specific applications		N/A
	Motor intended for specified applications that require a high torque subject of agreement between manufacturer and purchaser		N/A
	For cage-type induction motors specially designed to ensure starting current less than 4.5 times the rated current, excess torque not less than 50 %		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Special type induction motor with special inherent starting properties, value of excess torque subject of agreement between manufacturer and purchaser		N/A
	Rated torque (Nm)..... :		-
	Excess torque (Nm)..... :		-
9.4.2	Polyphase synchronous motors		N/A
	Capable of withstanding excess torque as specified for 15 s without failing out of synchronism		N/A
	Rated torque (Nm)..... :		-
	Excess torque (Nm)..... :		-
9.4.3	Other motors		N/A
	Momentary excess torque subject of agreement		N/A
	Rated torque (Nm)..... :		-
	Excess torque (Nm)..... :		-
9.5	Pull-up torque		N/A
	Unless otherwise specified, the pull-up torque of cage induction motors under full voltage shall be not less than 0.3 times the rated torque.		N/A
	Rated torque (Nm)..... :		-
	Locked-rotor torque (Nm)..... :		-
	Pull-up torque (Nm) ..... :		-
9.6	Safe operating speed of cage induction motors		N/A
	All three-phase single cage induction motors of frame number up to and including 315, shall be capable of safe continuous operation at speed up to the appropriate speed given in table 17, unless otherwise stated on rating plate.		N/A
9.7	Overspeed		P
	Withstanding speed specified in Table 18	1,2 times the maximum safe operating speed for 2 min	P
9.8	Short-circuit current for synchronous machines		N/A
	Peak value of short-circuit current of synchronous machines not exceeding 15 times peak value or 21 times the r.m.s. value of rated current		N/A
	Rated current (peak / r.m.s.) (A) ..... :		-
	Measured / calculated short-circuit current (A)..... :		-

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Clause	Requirement - Test	Result - Remark	Verdict
9.9	Short-circuit withstand test for synchronous machines		N/A
	Requested by purchaser		N/A
	Machine running on no-load with excitation corresponding to rated voltage, short circuit maintained for 3 s		N/A
	No harmful deformation, dielectric strength test not resulting in breakdown		N/A
9.10	Commutation test for commutator machines		N/A
	Capable of operating from no-load to operation with excess current or excess torque specified in 9.3 and 9.4 without permanent damage to surface of commutator and brushes, no injurious sparking, brushes remaining in same set position		N/A
9.11	Total Harmonic Distortion (THD) for synchronous machines		N/A
9.11.1	General		N/A
9.11.2	Limits		N/A
	Not exceeding limit		N/A
9.11.3	Tests		N/A
	THD limit (%) ..... :		-
	THD measured (%) ..... :		-
10	**RATING PLATES**		**P**
10.1	General		P
	Machine provided with rating plate, durable and securely mounted		P
	Rating plate mounted on frame, easily legible		P
	Second rating label requested by purchaser		N/A
10.2	Marking		P
	Machines with rated output not exceeding 750 W (VA) and special-purpose built-in machines with rated output not exceeding 3 kW (kVA) marked with items a, b, k, l, z as minimum		N/A
	Other machines marked with the following as far as applicable:		P
	a) Manufacturer's name or mark..... :	SHENLI FAN CO.,LTD	P
	b) Manufacturer's serial number, or identification mark ..... :	See "General product information"	P

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Clause	Requirement - Test	Result - Remark	Verdict
	c) Year of manufacture (or as code as part of item 2)) ..... :	Provided with separate data sheet	P
	d) Manufacturer's machine code ..... :	See “General product information”	P
	e) For AC machines, number of phases ..... :	See “General product information”	P
	f) Number(s) of rating and performance standard(s) which are applicable (IEC 60034-X and/or equivalent national standard(s)) ..... :	See “General product information”	P
	g) Degree of protection provided by enclosures (IP code) in accordance with IEC 60034-5 ..... :	IP55	P
	h) Motor within the scope of IEC 60034-30, the efficiency class and the rated efficiency ..... :		N/A
	i a) Thermal classification or permissible temperature rise ..... :	See “General product information”	P
	i b) If necessary, method of measurement, followed in case of machine with water-cooled heat exchanger by “P” or “S” ..... :		N/A
	j) Class(es) of rating of machine if designed for other than rating for continuous running duty type S1 ..... :	S1	N/A
	k) Rated output(s) or range (W or VA) ..... :	See “General product information”	P
	l) Rated voltage(s) or range of rated voltage (V) .. :	See “General product information”	P
	m a) For AC machines rated frequency or range of rated frequencies (Hz) ..... :	50Hz	P
	m b) For universal motors, rated frequency (Hz) followed by appropriate symbol ..... :		N/A
	n) For synchronous machines excited by permanent magnet the open circuit voltage at rated speed ..... :		N/A
	o) Rated current(s) or range (A) ..... :	See “General product information”	P
	p) Rated speed(s) or range of rated speeds (min^{-1} or r/min) ..... :	See “General product information”	P
	q) Permissible overspeed, if other than specified in 9.7 (min^{-1} or r/min) ..... :		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	r) For DC machines with separate excitation or with shunt excitation and for synchronous machines, rated field voltage (V) and rated field current (A)..... :		N/A
	s) For AC machines, rated power factor(s) ..... :	See “General product information”	P
	t) For wound-motor induction machines rated open-circuit voltage (V) between slip-rings and rated slip-ring current (A)..... :		N/A
	u) For DC motors with armatures intended to be supplied by static power converters, identification code of static power converter in accordance with IEC 60971 (alternatively for motors not exceeding 5 kW, rated form factor and rated alternating voltage at input terminals of static power converter, when this exceeds rated direct voltage of motor armature circuit)		N/A
	v) Maximum permissible ambient temperature, if other than 40 °C; maximum permissible water temperature, if other than 25 °C (°C) ..... :	60°C	P
	w) Minimum permissible ambient temperature if other than specified in 6.4 (°C) ..... :	-15°C	P
	x) Altitude for which machine is designed (if exceeding 1 000 m above sea level)..... :		N/A
	y) For hydrogen-cooled machines, hydrogen pressure at rated output (Pa or bar) ..... :		N/A
	z) When specified, approximate total mass of machine, if exceeding 30 kg (kg)..... :		N/A
	aa) For machines suitable for operation in only one direction of rotation, direction of rotation, indicated by arrow; arrow easily visible		N/A
	bb) The connecting instructions in accordance with IEC 60034-8 by means of a diagram or text located near the terminals.		N/A
	Two different rated values shall be indicated by X/Y and a range of rated values shall be indicated by X-Y		N/A
	If winding of machine is partially or totally repaired or changed by other than manufacturer, additional plate provided indicating repair contractor's name, year of repair and changes made.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict

11	**MISCELLANEOUS REQUIREMENTS**		**P**
11.1	Protective earthing of machines		P
	Machines shall be provided with an earthing terminal or another device to permit the connection of a protective conductor or an earthing conductor		P
	Appropriate symbol or legend used		P
	However , machines shall neither be earthed nor be provide with an earthing terminal when:	No such condition	N/A
	1) they are fitted with supplementary insulation, or		N/A
	2) they are intended for assembly in apparatus having supplementary insulation, or		N/A
	3) they have rated voltages up to 50V a.c. or 120V d.c. and are intended for use on SELV circuits.		N/A
	Machines with rated voltages greater than AC 50 V or DC 120 V, but not exceeding AC 1 000 V or DC 1 500 V terminal for earth conductor situated in vicinity of terminals for line conductors, inside terminal box (if provided); machines having rated outputs exceeding 100 kW provided with in addition, with earth terminal fitted on frame	Earth terminal fitted on frame near the terminals	P
	Machines with rated voltages greater than AC 1 000 V or DC 1 500 V provided with earth terminal on frame and in addition, means inside terminal box for connecting conducting cable sheath (if any)	Machines with rated voltages is not exceeding AC 1 000 V or DC 1 500 V	N/A
	Accessible conducting parts have good electrically conducting connection with earth terminal; if all bearings and rotor winding of machine are insulated, shaft electrically connected to earth terminal (unless manufacturer and purchaser agree to alternative means of protection)	Bearings are not insulted	P
	If earth terminal provided in terminal box, earth conductor made of same metal as live conductors		N/A
	If earth terminal provided on frame, earth conductor made of another metal, proper consideration given to conductivity of conductor		N/A
	Earth terminal designed to accommodate earth conductor of cross-sectional area in accordance with table 19		P

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Clause	Requirement - Test	Result - Remark	Verdict
	Cross-sectional area of live conductors (mm^2)..... :		
	Cross-sectional area of earth conductor (mm^2)..... :		
	The earth terminals shall be identified in accordance with IEC60445		
11.2	Shaft-end key(s)		N/A
	If machine shaft end provided with one or more keyways, keyway provided with full key of normal shape and length		N/A
12	**TOLERANCES**		**N/A**
	Tolerances as specified in Table 20	Not evaluated	N/A
13	**Electromagnetic compatibility (EMC)**		**P**
13.1	General		P
	Rotating machine with rated voltage not exceeding AC 1 000 V or DC 1 500 V		P
	Electronic components mounted inside rotating electrical machine and essential for its operation	No electronic components	N/A
13.2	Immunity		P
13.2.1	Machines not incorporating electronic circuits		P
	Machines without electronic circuits are not sensitive to electromagnetic emissions, no immunity tests are required. WARNING: Class A equipment is intended for use in an industrial environment. In the documentation for the user, a statement shall be included drawing attention to the fact that there may be potential difficulties in ensuring electromagnetic compatibility in other environments, due to conducted as well as radiated disturbances.		P
13.2.2	Machines incorporating electronic circuits		N/A
	As electronic circuits which are incorporated in machines generally utilize components that are passive, immunity tests are not required.		N/A
13.3	Emission		P
13.3.1	Machines without brushes		P
	Radiated and conducted emissions shall comply with the requirements of CISPR 11, Class B, Group 1, see Table B.1		P

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Clause	Requirement - Test	Result - Remark	Verdict
13.3.2	Machines with brushes		N/A
	Radiated and conducted (if applicable) emissions shall comply with the requirements of CISPR 11, Class A, Group 1, see Table B.2		N/A
13.4	Immunity tests		N/A
	Immunity tests are not required.		N/A
13.5	Emission tests		P
	Type tests shall be carried out in accordance with CISPR 11, CISPR 14 and CISPR 16 as applicable		P
13.5.1	Machines without brushes		P
	Machines without brushes shall comply with the emission limits of 13.3.1.		P
	Note: The emission from squirrel cage induction motors are always so low that the testing is not needed.		-
13.5.2	Machines with brushes		N/A
	Machines with brushes, when tested at no-load, shall comply with the emission limits of 13.3.2		N/A
14	**SAFETY**		**P**
14.1	Safety		P
	Rotating machine complying with the requirement of EN/IEC 60204-1 or EN/IEC 60204-11		P
	IP degree in compliance with EN/IEC 60034-5	IP55	P
	At least IP23 ..... :		P
	These motors shall comply with the requirements of EN 60335-1: 2002+A11+A1+A12+A2		N/A
	Clause 19.7 of EN 60335-1: 2002+A11+A1+A12+A2		N/A
	Stalling test by locking the rotor if the locked rotor torque is smaller than the full load torque or locking moving parts of other appliances		N/A
	Locked rotor, motor capacitors open-circuited or short-circuited, if required		N/A
	Locked rotor, capacitors open-circuited one at a time		N/A
	Test repeated with capacitors short-circuited one at a time, if required		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	Clause 24.5 of EN 60335-1: 2002+A11+A1+A12+A2		N/A
	For single phase-induction motors, Capacitors in auxiliary windings of motors marked with their rated voltage and capacitance and used accordingly		N/A
	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load		N/A
	Dimensions shall conform to IEC 60072-1 or IEC 60072-2		N/A
	Clearances and creepage distances complying with HD 625.S1 (IEC 60664-1).		P
	Overvoltage category ..... :	II	-
	Pollution degree ..... :	2	-
	Working voltage to earth (r.m.s.) ..... :	Max. 240V	-

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict

8	**TABLE: HEATING**		**P**
	Type / Model ..... :	CTF-80	-
	Supply voltage (V) ..... :	239,7V	-
	Supply frequency (Hz) ..... :	50Hz	-
	Supply current / power (A / W) ..... :	10,30A	-

Temperature rise measurement (with thermocouple)

Thermocouple locations	Max. temperature measured, (°C)	Temperature limit, (°C)	Verdict
Enclosure	16,4	-	-
Bearing	16,7	-	-
Supply conductor	12,9	-	-
Capacitor	16,5	-	-
Wiring box	16,3	-	-
Ambient temperature	11,0	-	-

Temperature rise measurement (resistance method)

Locations	t1(°C)	R1(Ω)	t2(°C)	R2(Ω)	ΔΘ (K)	Limit (K)	Verdict
Winding	9,6	1,474	11,0	1,703	36,5	105	P

Supplementary information: -

8	**TABLE: HEATING**		**P**
	Type / Model ..... :	CTF-I-42	-
	Supply voltage (V) ..... :	239,8V	-
	Supply frequency (Hz) ..... :	50Hz	-
	Supply current / power (A / W) ..... :	5,558A	-

Temperature rise measurement (with thermocouple)

Thermocouple locations	Max. temperature measured, (°C)	Temperature limit, (°C)	Verdict
Enclosure	22,8	-	-
Bearing	23,0	-	-
Supply conductor	11,4	-	-
Capacitor	23,1	-	-
Wiring box	10,9	-	-
Ambient temperature	8,4	-	-

EN 60034-1:2010			
Clause	Requirement - Test	Result - Remark	Verdict

Temperature rise measurement (resistance method)							
Locations	t1(°C)	R1(Ω)	t2(°C)	R2(Ω)	ΔΘ (K)	Limit (K)	Verdict
Winding	8,1	5,634	8,4	6,498	36,9	105	P
Supplementary information: -							

9.2	**TABLE: WITHSTAND VOLTAGE TEST**				**P**
Test location/circuit	Type of insulation	Type/model	Working voltage, (V)	Test voltage (V)	Flashover/break down (Yes/No)
Between winding and enclosure	Basic insulation	CTF-80	220 – 240V	1500V	No
Between winding and enclosure	Basic insulation	CTF-I-42	220 – 240V	1500V	No
Supplementary information: -					

9.4	**TABLE: OVERSPEED**			**P**
Type/model	Rated speed (r/min)	1,2 × Rated speed (r/min)	Test period (min)	Verdict
CTF-80	960 r/min	1152 r/min	2,0 mins	P
CTF-I-42	720 r/min	864 r/min	2,0 mins	P
Supplementary information: -				

14	**TABLE: CLEARANCE AND CREEPAGE DISTANCE MEASUREMENTS**					P
clearance cl and creepage distance dcr at/of:		U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Between winding and enclosure		220 - 240V	1,5mm	> 2,0mm	2,5mm	> 4,0mm
Supplementary information: -						

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict

6	**Marking**		**P**
	It is recommended that the characteristic letters and numerals be marked on the machine		P
	- preferably on the rating plate	IP55	P
	- on the enclosure		N/A
	The lower degree of protection of: - guards for external fans (as allowed in 4.3); - drain holes (as allowed in 4.4); need not be specified on the rating plate or in the documentation.		N/A
	Where the mounting of the machine has an influence on the degree of protection	According to user manual	N/A

7	**General requirements for tests**		**P**
7.1.1	Low-voltage machines (rated voltages not exceeding 1 000 V a.c. and 1 500 V d.c.)	rated voltages not exceeding 1 000 V a.c. and 1 500 V d.c	P
	The test device (sphere, finger, wire, etc.) does not touch the live parts or moving parts other than non-dangerous parts such as smooth rotating shafts.	IP 20 for motor fan	P
7.1.2	High-voltage machines (rated voltages exceeding 1 000 V a.c. and 1 500 V d.c.)		N/A
	When the test device is placed in the most unfavourable position, the machine shall be capable of withstanding the dielectric test applicable to the machine		N/A
	This dielectric test requirement may be replaced by a specified clearance dimension in air which would ensure that this test would be satisfactory under the most unfavourable electrical field configuration		N/A

8	**Tests for first characteristic numeral**		**P**
	The dust test for numerals 5 and 6 shall be performed		P
	- with the shaft stationary, provided that the difference in pressure between running and stationary (caused by fan effects) is lower than 2 kPa		P

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Clause	Requirement - Test	Result - Remark	Verdict
	- If the pressure difference is greater than 2 kPa, the internal machine pressure during the dust test shall be depressed accordingly.		N/A
	- Alternatively, the machine may be tested with the shaft rotating at rated speed.		N/A
	Test and acceptance conditions for the first characteristic numeral are given in table 4.		P
	- 0: No test is required.		N/A
	- 1: The test is made with a rigid sphere of 50 mm diameter applied against the opening(s) in the enclosure with a force of 45 N to 55 N		N/A
	The protection is satisfactory if the sphere does not pass through any opening and adequate clearance is maintained to parts which are normally live in service or moving parts inside the machine.		N/A
	- 2:a) Finger test; b) Sphere test	IP20 for motor fan	P
	The protection is satisfactory if the sphere does not pass through any opening and adequate clearance is maintained to live or moving parts inside the machine.		P
	- 3: The test is made with a straight rigid steel wire or rod of 2,5 mm diameter applied with a force of 2,7 N to 3,3 N. The end of the wire or rod shall be free from burrs and at right angles to its length.		N/A
	The protection Is satisfactory if the wire or rod cannot enter the enclosure.		N/A
	- 4: The test is made with a straight rigid steel wire of 1 mm diameter applied with a force of 0,9 N to 1,1 N. The end of the wire shall be free from burrs and at right angles to its length.		N/A
	The protection is satisfactory if the wire or rod cannot enter the enclosure.		N/A
	- 5: a) Dust test; b) Wire test		P
	a) Dust test The protection is satisfactory if, on inspection, talcum powder has not accumulated in a quantity or location such that it could interfere with the satisfactory operation of the machine. NOTE No dust should deposit where it could lead to tracking along the creepage distances."		P

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict
	b) Wire test If the machine is intended to be run with open drain hole(s), these shall be tested in the same manner as the first characteristic numeral 4, that is, using a 1 mm diameter wire.		P
	- 6: Test in accordance with 5 a). The protection is satisfactory if, on inspection, there is no ingress of talcum powder.		N/A
	The protection is satisfactory if, on inspection, there is no ingress of talcum powder.		N/A
9	**Tests for second characteristic numeral**		**P**
	Test conditions for the second characteristic numeral are given in table 5.		P
	- 0: No test is required.		N/A
	- 1: The test is made by means of an equipment, the principle of which is shown in figure 3.		N/A
	- 2: The dripping equipment is the same as that specified for the second characteristic numeral 1 and is adjusted to give the same rate of discharge. The machine is tested for 2,5 mm in each of four fixed positions of tilt. These positions are 15° either side of the vertical in two mutually perpendicular planes. The total duration of the test shall be 10 mm.		N/A
	- 3: The test shall be made using equipment such as is shown in figure 4, provided that the dimensions and shape of the machine to be tested are such that the radius of the oscillating tube does not exceed 1 m. Where this condition cannot be fulfilled, a hand-held spray device, as shown in figure 5, shall be used.		N/A
	a) Conditions when using test equipment as shown in figure 4. The total flow rate shall be adjusted to an average rate of (0,067 to 0,074) 1/mm per hole multiplied by the number of holes. The total flow rate shall be measured with a flowmeter. The tube is provided with spray holes over an arc of 60° either side of the centre point and shall be fixed in a vertical position. The test machine is mounted on a turntable with a vertical axis and is located at approximately the centre point of the semicircle. The minimum duration of the test shall be 10 mm.		N/A

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict
	b)Conditions when using test equipment as shown in figure 5. The moving shield shall be in place for this test. The water pressure is adjusted to give a delivery rate of (10 ± 0,5) 1/mm (pressure approximately 80 kPa to 100 kPa (0,8 bar to 1,0 bar)). The test duration shall be 1 min/m^2 of calculated surface area of the machine (excluding any mounting surface and cooling fin) with a minimum duration of 5 mm.		N/A
	- 4: The conditions for deciding whether the apparatus of figure 4 or that of figure 5 should be used are the same as stated for the second characteristic numeral 3.		N/A
	a) Using the equipment as shown in figure 4. The oscillating tube has holes drilled over the whole 180° of the semicircle. The test duration and the total water flow rate are the same as for degree 3. The support for the machine under test shall be perforated so as to avoid acting as a baffle and the enclosure shall be sprayed from every direction by oscillating the tube at a rate of 60° s^{-1} to the limit of its travel in each direction.		N/A
	b) Using the equipment as shown in figure 5. The moving shield is removed from the spray nozzle and the machine is sprayed from all practicable directions. The rate of water delivery and the spraying time per unit area are the same as for degree 3.		N/A
	- 5: The test is made by spraying the machine from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6. The conditions to be observed are as follows: - nozzle internal diameter: 6,3 mm; - bdelivery rate: 11,9 — 13,2 1/mm; - water pressure at the nozzle: approximately30kPa (0.3 bar) (see NOTE 1): - test duration per m^2 of surface area of the machine: 1 mm; - minimum test duration: 3 mm; - distance from nozzle to machine surface: approximately 3 m (see NOTE 2). (This distance		P

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict
	may be reduced, if necessary to ensure proper wetting when spraying upwards).		
	- 6: The test is made by spraying the machine from all practicable directions with a stream of water from a standard test nozzle as shown in figure 6. The conditions to be observed are as follows: - nozzle internal diameter: 12.5 mm; - delivery rate: 95— 105 1/mm - water pressure at the nozzle: approximately 100 kPa (1 bar) (see NOTE 1); - test duration per m^2 of surface area of the machine: 1 mm; - minimum test duration: 3 mm; - distance from nozzle to machine surface: approximately 3 m (see NOTE 2).		N/A
	- 7: The test is made by completely immersing the machine in water so that the following conditions are satisfied: a) the surface of the water shall be at least 150 mm above the highest point of the machine; b) the lowest portion of the machine shall be at least 1 m below the surface of the water; c) the duration of the test shall be at least 30 mm; d) the water temperature shall not differ from that of the machine by more than 5 °C. By agreement between manufacturer and user, this test may be replaced by the following procedure: The machine should be tested with an inside air pressure of about 10 kPa (0,1 bar). The duration of the test is I mm. The test is deemed satisfactory if no air leaks out during the test. Air leakage may be detected either by submersion, the water just covering the machine, or by the application onto it of a solution of soap in water.		N/A
	-8: The test conditions are subject to agreement between manufacturer and user, but they shall not be less severe than those prescribed for degree 7.		N/A
9.2	Acceptance conditions		P
	After the test in accordance with table 5 has been carried out, the machine shall be inspected for ingress of water and subjected to the following verification and tests		P

EN 60034-5:2001+A1:2007			
Clause	Requirement - Test	Result - Remark	Verdict
9.2.1	The amount of water which has entered the machine shall not be capable of interfering with its satisfactory operation. The windings and live parts not designed to operate when wet shall not be wet and no accumulation of water which could reach them shall occur inside the machine. It is, however, permissible for the blades of fans inside rotating machines to be wet and leakage along the shaft is allowable if provision is made for drainage of this water.	No water enter	P
9.2.2	In the case of a test on a machine not running: a) the machine shall be operated under no – load conditions at rated voltage for 15 min, b) then be submitted to a withstand voltage test, the test voltage being 50% of the test voltage for a new machine (but not less than 125% of the rated voltage). In the case of a test on a running machine, only the withstand voltage test is made, in accordance with item b) above.	750V/1min	P
	The test is deemed satisfactory if these checks show no failure		P

TABLE: List of critical components					
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1]**
Capacitor	Zhejiang Shuangfeng Electric Co., Ltd.	CBB60	250V, 6uF, 8uF, 25uF, 15uF, 30uF, 34uF, 60uF, 10uF, 12uF, 35uF	EN 60252-1:2011+A1	TUV R50331520
Plug	Zhejiang Anda Electric Wire and Cable Co.,ltd	AD-002	AC 250V, 16A	DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01 DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09	VDE 40028847
Power Cord	Zhejiang Anda Electric Wire and Cable Co.,ltd	H05VV-F	3×0,75mm^2 3×1,5mm^2	DIN EN 50525-2-11 (VDE 0285-525-2-11):2012-01; EN 50525-2-11:2011	VDE 40020685
Power Cord	Zhejiang Anda Electric Wire and Cable Co.,ltd	H07RN-F	3×1,0mm^2 3×1,5mm^2	DIN EN 50525-2-21 (VDE 0285-525-2-21):2012-01; EN 50525-2-21:2011	VDE 40049698
Thermal protector	Suzhou Industrial Park Kain Electronic Sci. & Tech. Co., Ltd.	17AM-K	AC 230V – 250V, 3.C, Tmin: 0 °C, Tmax: 180 °C, bimetal	DIN EN 60730-1 (VDE 0631-1):2012-10; EN 60730-1:2011 DIN EN 60730-2-9 (VDE 0631 Teil 2-9):2011-07; EN 60730-2-9:2010	VDE 40045845
Switch	Zhejiang Kedu Electrical Manufacturing Co.,Ltd	HY29E	250VAC, 15A	EN 61058-1:2002+A2	TUV R50193431
		KOA8	250VAC, 16A		
Switch	Zhejiang Xurui Electronic Co.,Ltd.	XT-21B	250VAC, 15A	EN 60947-5-1:2004+A1	TUV B121172076020

Prüfbericht - Nr.: *Test Report No.:*	**CN212Z1L 001**	**Auftrags-Nr.:** *Order No:*	180196631	Seite 1 von 16 *Page 1 of 16*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	2020.12.22	
Auftraggeber: *Client:*	SHENLI FAN CO.,LTD Wenbing Road, Guanlu Village, Zeguo Town, Wenling City, 317523 Zhejiang P.R. China			
Prüfgegenstand: *Test item:*	AIR-VENTILATION FAN			
Bezeichnung / Typ-Nr. : *Identification / Type No. :*	CTF-x, BTF-x, CTF-| -y (x = 20, 25, 30, 35, 40, 40-2, 45, 45-2, 50, 50-2, 60, 70, 80; y = 24, 28, 32, 36, 42)			
Auftrags-Inhalt: *Order content:*	TÜV Rheinland – EMC Service			
Prüfgrundlage: *Test specification:*	**EN 60034-1:2010**			

Wareneingangsdatum: *Date of receipt:*	2021.01.14
Prüfmuster-Nr.: *Test sample No.:*	A002983342-001
Prüfzeitraum: *Testing period:*	2021.01.15-2021.01.18
Ort der Prüfung: *Place of testing:*	Refer to section 1.1
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Prüfergebnis*: *Test result*:*	Pass

geprüft von/ *tested by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
2021.01.19	Tracy Zhang/PE	Tracy Zhang

kontrolliert von/ *reviewed by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
2021.01.19	Season Yang/TC	Season Yang

Sonstiges/ *Other:*

In electrical characteristics, all models are similar. The differences among them are the rated power and in the mechanical aspect. Therefore, all EMC tests were performed on model CTF-80 with the highest power.

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery :*	Prüfmuster vollständing 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 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 specification(s)		*F(ail)= failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

-Model List:

No.	Type	No. of phases	IP code	Thermal class	Rated voltage (V)	Rated current (A)	Rated speed (r/min)	Rated power factor
1.	CTF-20	Single	IP55	F	AC 220 – 240V, 50Hz	0,77	2850	0,81
2.	CTF-25	Single	IP55	F		0,95	2850	0,85
3.	CTF-30	Single	IP55	F		1,59	2850	0,82
4.	CTF-35	Single	IP55	F		2,51	2850	0,85
5.	CTF-40	Single	IP55	F		1,81	1420	0,85
6.	CTF-40-2	Single	IP55	F		4,54	2850	0,85
7.	CTF-45	Single	IP55	F		2,95	1420	0,82
8.	CTF-45-2	Single	IP55	F		7,2	2850	0,82
9.	CTF-50	Single	IP55	F		3,41	1400	0,84
10.	CTF-50-2	Single	IP55	F		8,15	2850	0,84
11.	CTF-60	Single	IP55	F		6,36	1420	0,84
12.	CTF-70	Single	IP55	F		7,72	1420	0,84
13.	CTF-80	Single	IP55	F		8,63	960	0,84
14.	CTF-I-24	Single	IP55	F	AC 220 – 240V, 50Hz	1,59	960	0,84
15.	CTF-I-28	Single	IP55	F		1,81	960	0,84
16.	CTF-I-32	Single	IP55	F		1,91	720	0,81
17.	CTF-I-36	Single	IP55	F		2,95	720	0,84
18.	CTF-I-42	Single	IP55	F		5,0	720	0,83
19.	BTF-20	Single	IP55	F	AC 220 – 240V, 50Hz	0,77	2850	0,81
20.	BTF-25	Single	IP55	F		0,95	2850	0,85
21.	BTF-30	Single	IP55	F		1,59	2850	0,82
22.	BTF-35	Single	IP55	F		2,51	2850	0,85
23.	BTF-40	Single	IP55	F		1,81	1420	0,85
24.	BTF-40-2	Single	IP55	F		4,54	2850	0,85
25.	BTF-45	Single	IP55	F		2,95	1420	0,82
26.	BTF-45-2	Single	IP55	F		7,2	2850	0,82
27.	BTF-50	Single	IP55	F		3,41	1400	0,84
28.	BTF-50-2	Single	IP55	F		8,15	2850	0,84
29.	BTF-60	Single	IP55	F		6,36	1420	0,84
30.	BTF-70	Single	IP55	F		7,72	1420	0,84
31.	BTF-80	Single	IP55	F		8,63	960	0,84

Test Summary

4.1 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE
Result:
Pass
4.2 RADIATED DISTURBANCE
Result:
Pass
5 IMMUNITY
Result:
N/A

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland /CCIC(Ningbo) Co., Ltd.

1st Floor, Building 11, Scholar Innovation Park, No.1188 Zhongguan Road, Zhenhai District, Ningbo 315200 P.R. China.

The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment of Laboratory

No.	Equipment	Model	Serial no.	Cal. due date
1.	EMI receiver	ESR3	102331	2020.11.24
2.	LISN	ENV216	102250	2020.11.24
3.	EMI test receiver	ESR7	101929	2020.11.24
4.	Bilog Antenna	CBL6112D	49033	2021.04.12

1.3 Measurement Uncertainty

Test Item	Expanded Measurement Uncertainty (k=2)
Conducted Emission (9-150kHz)	3.70dB
Conducted Emission (150k-30MHz)	3.30dB
Disturbance Power	4.27dB
Radiated Emission (30-1000MHz)	4.39dB
Radiated Emission (1-18GHz)	4.67dB
Radiated Emission (CDNE method)	4.05dB

2 General Product Information

2.1 Product Function and Intended Use

The EUTs (equipment under test) are ordinary AIR-VENTILATION FAN. It belongs to Machines without brushes. For the further information, refer to the user's manual.

2.2 Ratings and System Details

System Input	:	Refer to page 2
Rated power	:	Refer to page 2
Protection Class	:	I

Refer to the user's manual for further information.

2.3 Independent Operation Modes

The basic operation modes are: "On" or "Off".

Refer to the user's manual for further information.

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram for more information.

2.5 Submitted Documents

Circuit diagram, user's manual, Label etc.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test conditions were adapted accordingly in reference to the instructions for use.

Refer to the related paragraph of this report.

Immunity:

Refer to the related paragraph of this report.

3.2 Physical Configuration for Testing

Refer to the related paragraph of this report.

3.3 Test Operation and Test Software

Refer to the related paragraph of this report. No software was used.

3.4 Special Accessories and Auxiliary Equipment

None.

3.5 Countermeasures to achieve EMC Compliance

The tested sample contained no noise suppression components to achieve EMC compliance. No other special measure is employed to achieve the requirement.

4 Test Results E M I S S I O N

4.1 Mains Terminal Continuous Disturbance Voltage

Result:	**Pass**

Date of testing	:	2021.01.18
Kind of test site	:	Shielding Room
Port	:	Mains
Basic Standard	:	CISPR 11 and CISPR 16-1 series standards
Frequency Range	:	0.15 – 30MHz
Limit	:	EN 60034-1:2010, Table B.1
Ambient Condition	:	Temperature: 17°C; Relative Humidity: 49%

Test Setup

Input Voltage	:	AC 230V, 50Hz
Operational mode	:	Normal working
Test Setup	:	CISPR 11, Class B, Group 1.

The measurement setup was made according to CISPR 11 in a shielded room.

The measurement equipment like test receivers, quasi-peak detector and artificial mains network (AMN) are in compliance with CISPR 11 and CISPR 16-1 series standards.

The tested object was set-up on a wooden table. The length of the power cord of the tested object was about 0.8m. The EUT was set 0.8m away from the AMN.

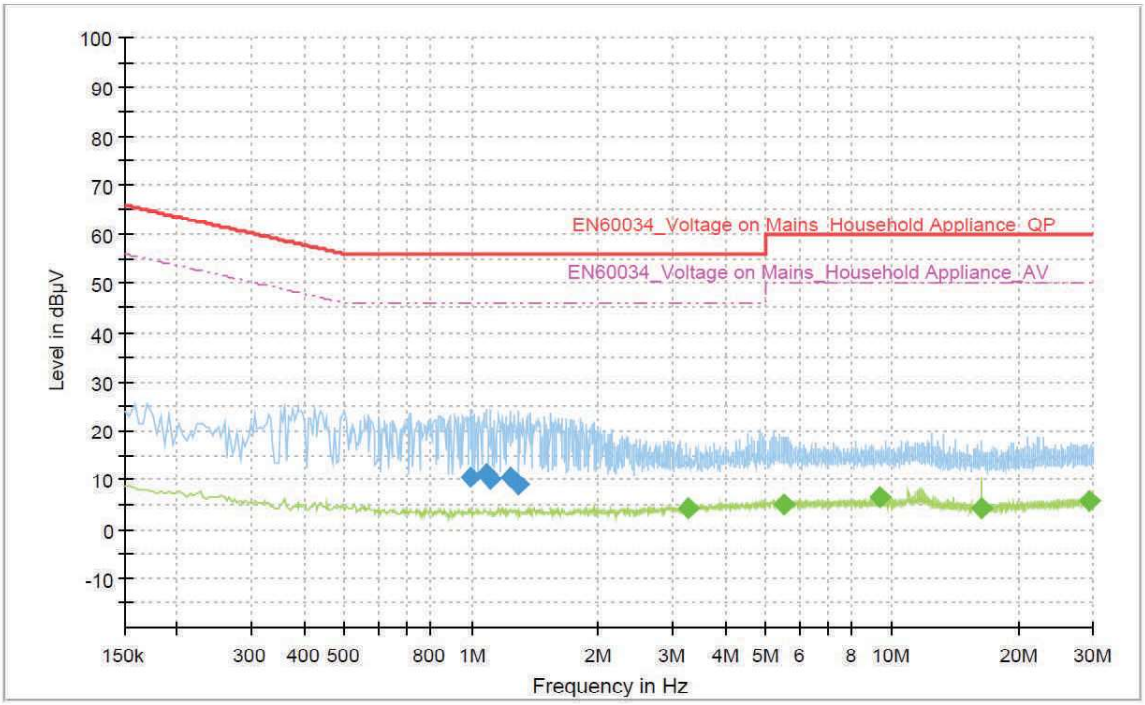
The disturbance voltage test was performed on the neutral line and phase line of the power supply of the EUT respectively.

Before measurement, a survey was made to determine in which state the maximum disturbance was obtained. And the measurement was made in the state the maximum disturbance was obtained.

The following figures and tables were those measured by an automatic measuring system. Both Quasi Peak and Average Value were measured. Quasi-Peak and Average Value were measured and listed respectively where they had a maximum in previous scanning survey. In the Figures, "♦" means Quasi-Peak Value and Average Value which were measured in final measurement.

Figure 1: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L

Full Spectrum

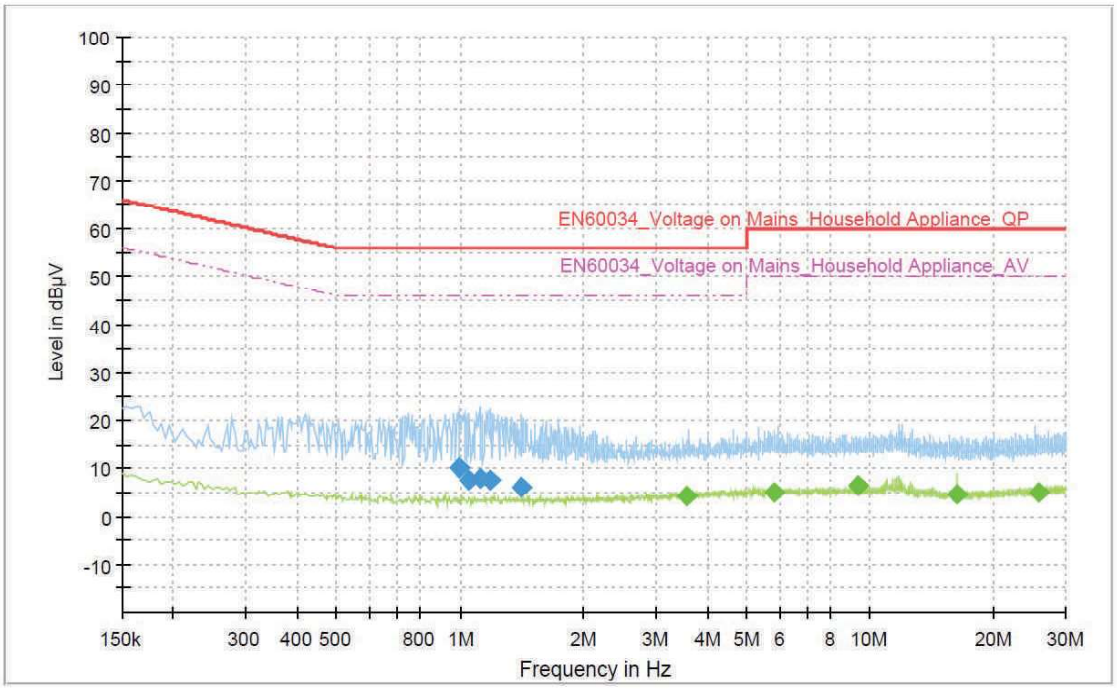


Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.998000	10.40	---	56.00	45.60	1000.0	9.000	L1	ON	9.5
1.082000	11.21	---	56.00	44.79	1000.0	9.000	L1	ON	9.5
1.106000	10.16	---	56.00	45.84	1000.0	9.000	L1	ON	9.5
1.234000	10.53	---	56.00	45.47	1000.0	9.000	L1	ON	9.5
1.290000	9.11	---	56.00	46.89	1000.0	9.000	L1	ON	9.5
3.282000	---	4.10	46.00	41.90	1000.0	9.000	L1	ON	9.6
5.526000	---	5.05	50.00	44.95	1000.0	9.000	L1	ON	9.7
9.358000	---	6.32	50.00	43.68	1000.0	9.000	L1	ON	9.8
16.254000	---	4.37	50.00	45.63	1000.0	9.000	L1	ON	10.0
29.482000	---	5.62	50.00	44.38	1000.0	9.000	L1	ON	10.1

Figure 2: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, N

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.990000	10.22	---	56.00	45.78	1000.0	9.000	N	ON	9.5
1.054000	7.59	---	56.00	48.41	1000.0	9.000	N	ON	9.5
1.114000	8.01	---	56.00	47.99	1000.0	9.000	N	ON	9.5
1.182000	7.47	---	56.00	48.53	1000.0	9.000	N	ON	9.5
1.414000	5.93	---	56.00	50.07	1000.0	9.000	N	ON	9.6
3.582000	---	4.24	46.00	41.76	1000.0	9.000	N	ON	9.7
5.858000	---	5.04	50.00	44.96	1000.0	9.000	N	ON	9.7
9.358000	---	6.58	50.00	43.42	1000.0	9.000	N	ON	9.8
16.234000	---	4.41	50.00	45.59	1000.0	9.000	N	ON	10.0
25.702000	---	5.12	50.00	44.88	1000.0	9.000	N	ON	10.1

4.2 Radiated disturbance

Result:	**Pass**

Date of testing	:	2021.01.15
Test procedure	:	CISPR 11 and CISPR 16-1 series standards
Frequency range	:	30 – 1000MHz
Limits	:	EN 60034-1:2010, Table B.1
Kind of test site	:	Semi-anechoic chamber
Operation modes	:	Normal working

Test Setup

Input voltage	:	AC 230V 50Hz
Operational mode	:	On
Temperature	:	21°C
Relative humidity	:	57%

Measuring configuration and description

The radiated disturbance test was carried out in a semi-anechoic chamber. The test distance from the receiving antenna to the EUT is 3m. The normalized site attenuation of the semi-anechoic chamber is regularly calibrated to ensure the radiated disturbance test results are valid. During the test, the EUT was placed on a wooden table, which is 0.8m high. The wooden table was rotated 360° around and the antenna was varied from 1m to 4m to find the maximum disturbance. The test was performed with the antenna both in its horizontal and vertical polarizations.

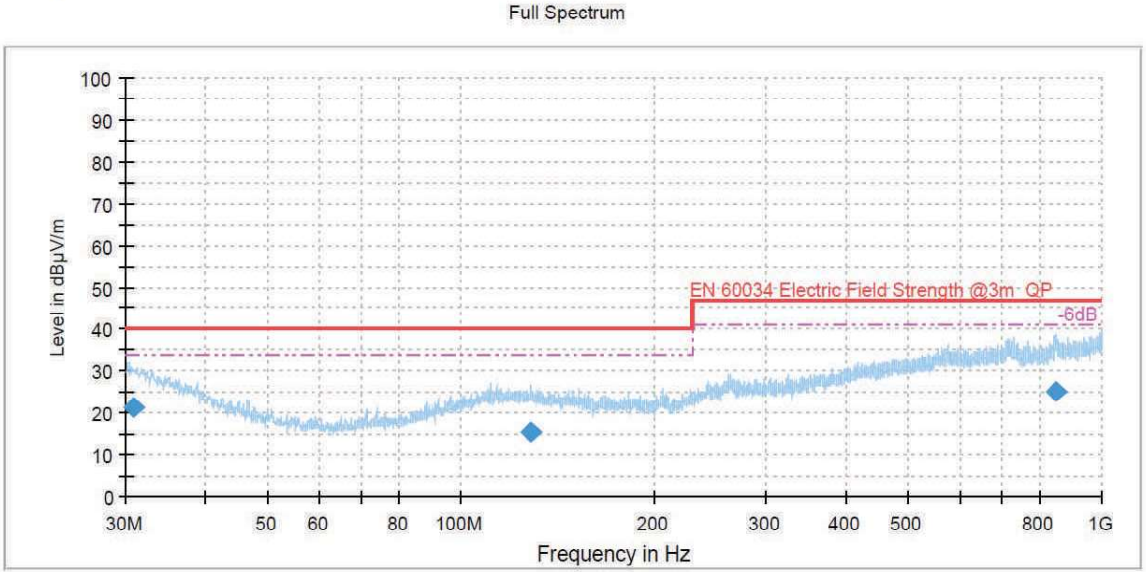
The following figures and tables were those measured by an automatic measurement system. A preview test was firstly performed with peak detector. The final test was performed with quasi-peak at those critical frequencies during the preview test. In the following figures, "♦" mean final measurement results with quasi-peak detector.

Before measurement, a survey was made to determine in which state the maximum disturbance was obtained. And the measurement was made in the state the maximum disturbance was obtained.

The following figures were those measured and recorded by a test receiver. Peak Value were measured and listed respectively where they had a maximum in previous scanning survey. In the Figures, "♦" means Quasi-Peak Value which were measured in final measurement.

Figure 3: Spectral Diagrams, Radiated Emission, 30-1000MHz, horizontal

Full Spectrum

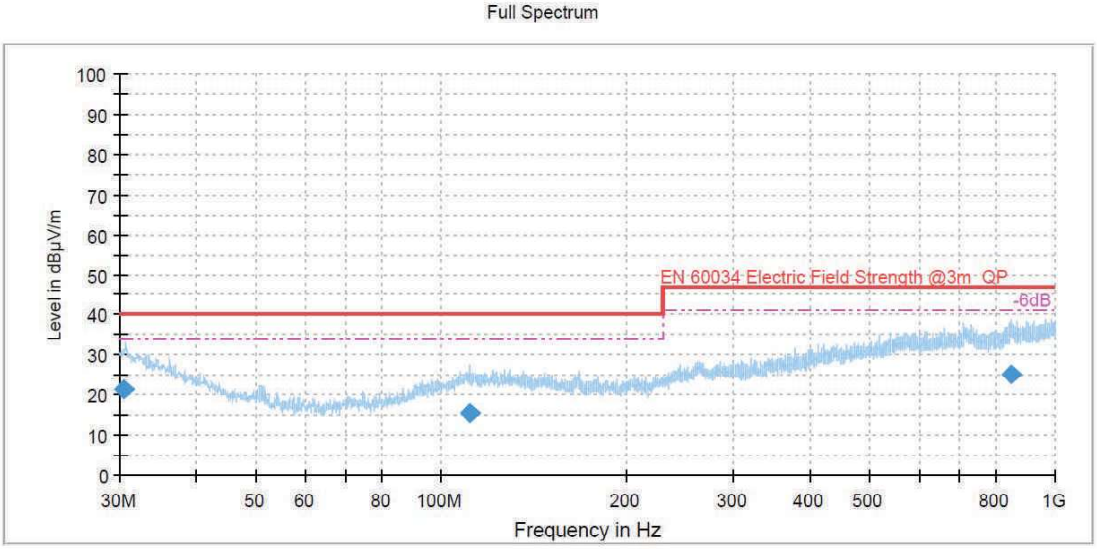


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.920556	21.27	40.00	18.73	1000.0	120.000	226.0	H	118.0	24.8
128.800000	15.55	40.00	24.45	1000.0	120.000	216.0	H	6.0	19.0
850.667778	25.11	47.00	21.89	1000.0	120.000	393.0	H	302.0	29.4

Figure 4: Spectral Diagrams, Radiated Emission, 30-1000MHz, vertical

Full Spectrum



Final_Result

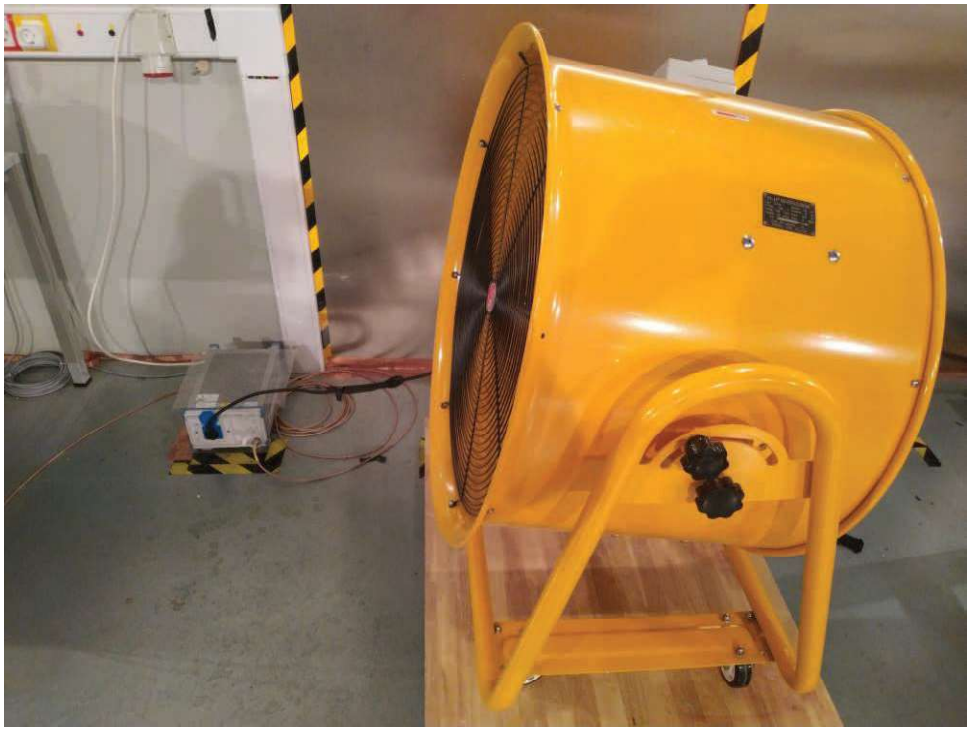
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.480556	21.53	40.00	18.47	1000.0	120.000	367.0	V	319.0	25.0
111.460000	15.54	40.00	24.46	1000.0	120.000	374.0	V	139.0	19.1
845.854444	25.24	57.00	21.76	1000.0	120.000	254.0	V	256.0	29.4

5 Test Results I M M U N I T Y

According to clauses 13.2 & 13.4 of EN 60034-1:2010, Immunity tests are not required.

6 Photographs of the Test Set-Up

Photograph 1: Set-up for Disturbance Voltage



Photograph 2: Set-up for Disturbance Radiation

6 List of Tables

7 List of Figures

8 List of Photographs

-- The END --