

EMC test laboratory Royal Philips Drachten, Netherlands

Report : SM 9593	Samples : 3	Appliance : Trimmer
Date : November 11, 2019		type nr. : HC7450 & HC7452
Test engineer : H. Bodde		
Tested sample: HC7450		
Remarks : U5 PIE added.		
Test purpose : Release		Rating : 100-240V / 9W
Manufacturer : Batam, Indonesia		50-60Hz

Test equipment calibrated up to February, 2020

Summary of test results :

Tested according to	Test result
2014/30/EU	PASS

R F E m i s s i o n

Test according to :	Result
EN 55011:2009+A1	N.A.
CISPR 11:2009+A1	
EN 55014-1:2017	Pass
CISPR 14-1:2016	
EN 55015:2013+A1	N.A.
CISPR 15:2013+A1	

L F E m i s s i o n

Test according to :	Result
EN 61000-3-2:2014	Pass
IEC 61000-3-2:2014	
EN 61000-3-3:2013	Pass
IEC 61000-3-3:2013+A1	

I m m u n i t y

Test according to :	Result
EN 55014-2:2015	Pass
CISPR 14-2:2015	
EN 60601-1-2:2014	N.A.
IEC 60601-1-2:2014	

Test conditions EMC-EMF laboratory:

Temperature:	21.1 °C
Humidity:	58.5 %

FINAL TEST RESULT:

Fulfills EMC-requirements for CE-mark

Interference source :

Commutator motor Mabuchi,
type: FF-180SH-2661
exchangeable with :
Commutator motor Mabuchi,
type: FF-180SV-2661
exchangeable with :
Commutator motor Loda,
type: LD 180FF2653 P2
Electronics.

Interference suppression :

<C101> Cap. 4.7µF, Murata,
type: 10% 25V X7R
<C102> Cap. 10µF, Murata,
type: 10% 6.3V X5R
<C105> Cap. 10nF, Murata,
type: 10% 50V X7R
<C106> Cap. 10nF, Murata,
type: 10% 50V X7R
<C604> Cap. 2.2µF, Murata,
type: 10% 6.3V X5R
<M> Varistor on commutator
type: Disk

Circuitdiagram :

See page 10.

This report is based on testdata from report SM9250.

Appliance tested with Powerplug:

HQ8505/D (PI electronics) see : SM8889 U4
HQ8505/SSW2600 (Salom)see : SM8859 U4
exchangeable with :
HQ8505/D (PI electronics) see : SM9468 U5
(most unfavorable values noted in this report)

PHILIPS
EMC testlab.
Box 20100
9200 CA Drachten
Netherlands



Measurements are done according required standards and norms in all aspects such as test setup, placement (distance) of EUT, cord length, test voltage etc.

Test Engineer : H. Bodde

Date : November 11, 2019

Signed for approval : J. Hoekstra

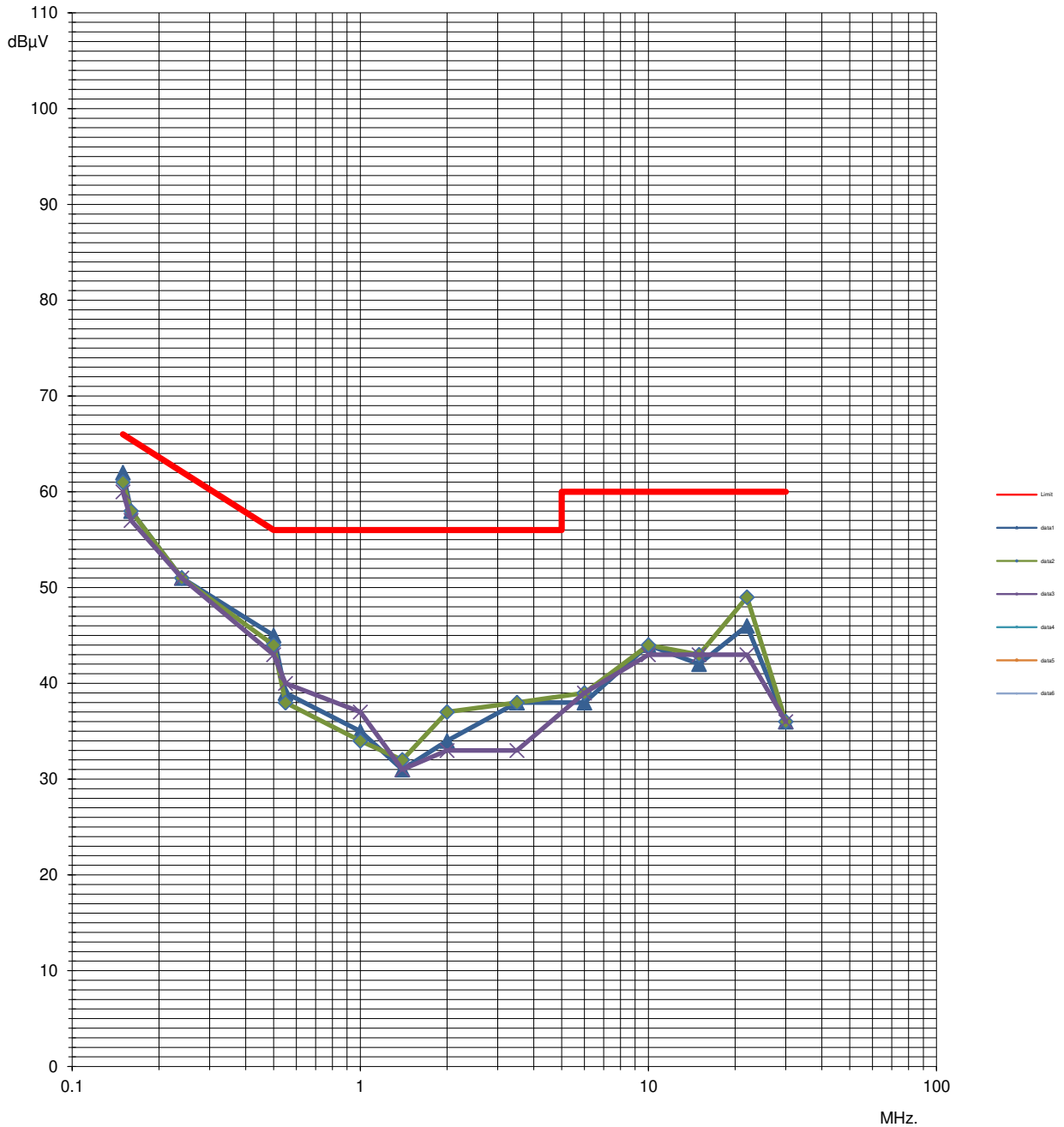
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Voltage measurement 0.1485-30 MHz. acc. to CISPR-14 Q-PEAK detector / Q-PEAK limit

Test equipment : Receiver TESEQ SMR4503

LISN ROHDE&SCHWARZ ENV 216



TESTRESULT

PASS

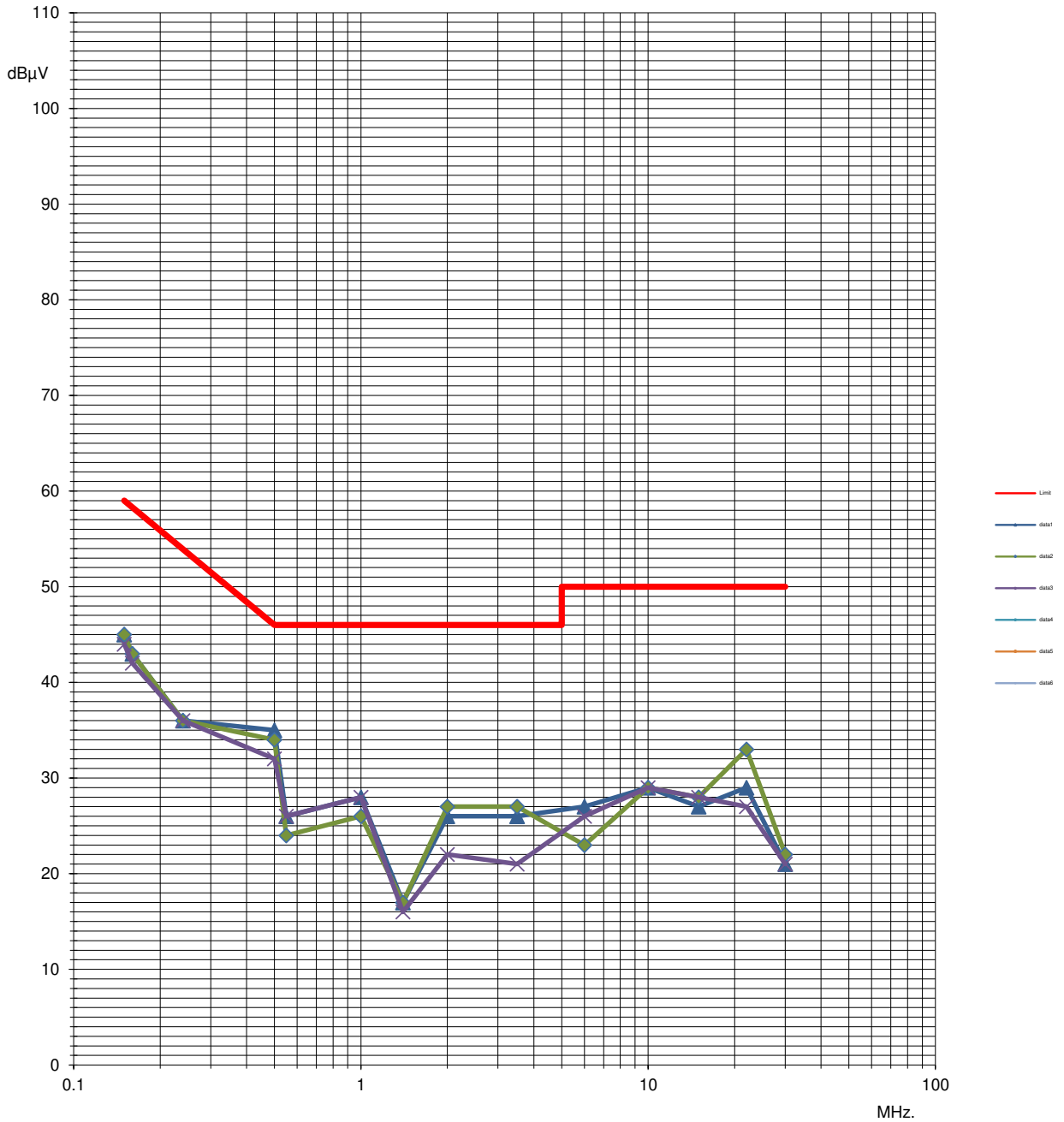
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Test equipment : Receiver TESEQ SMR4503

LISN ROHDE&SCHWARZ ENV 216



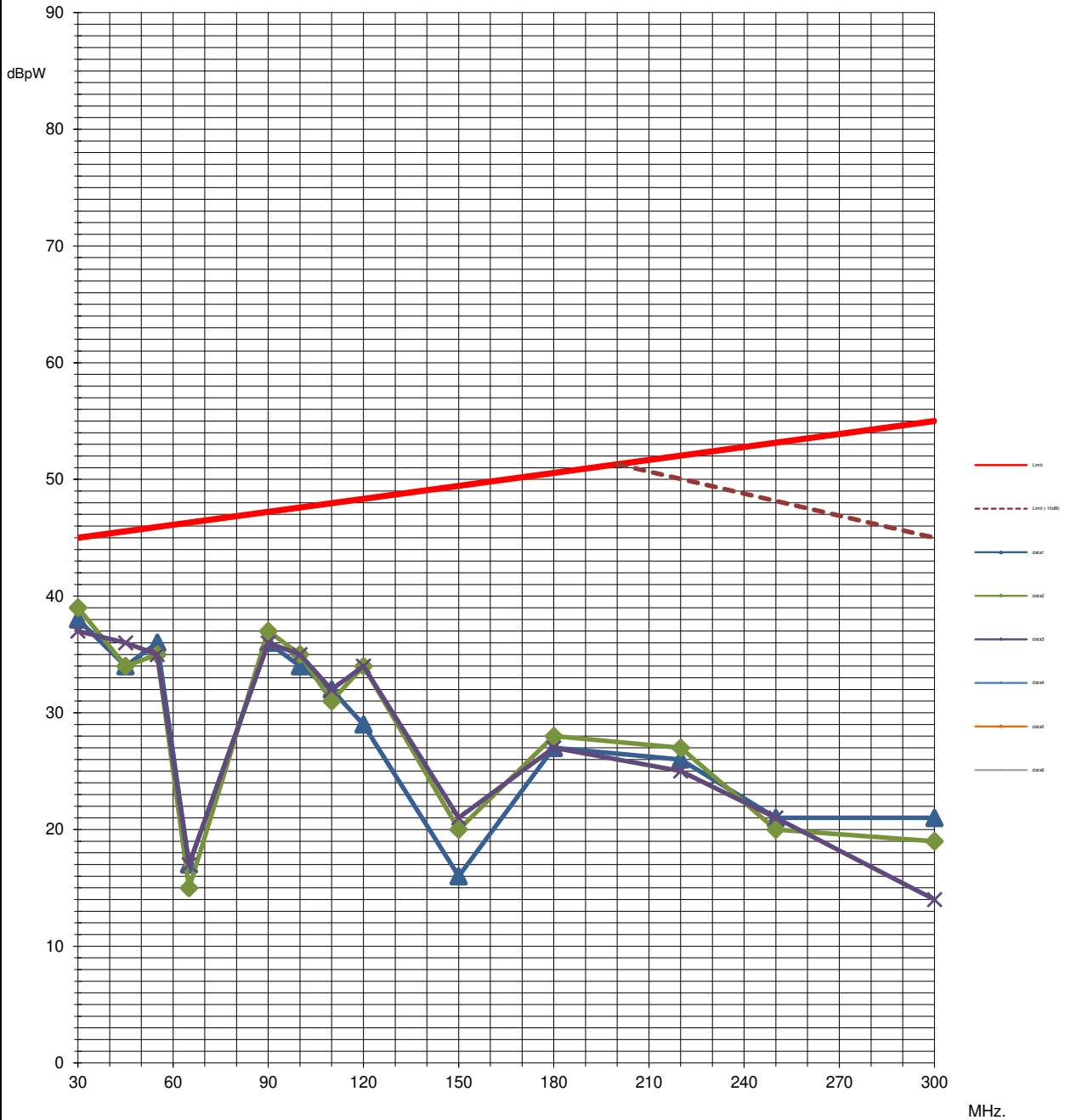
TESTRESULT	PASS
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Power measurement 30-300 MHz. acc. to CISPR-14 Q-PEAK detector / Q-PEAK limit

Test equipment : Receiver TESEQ SMR4503 Clamp Lüthi MdS 21



TESTRESULT	PASS
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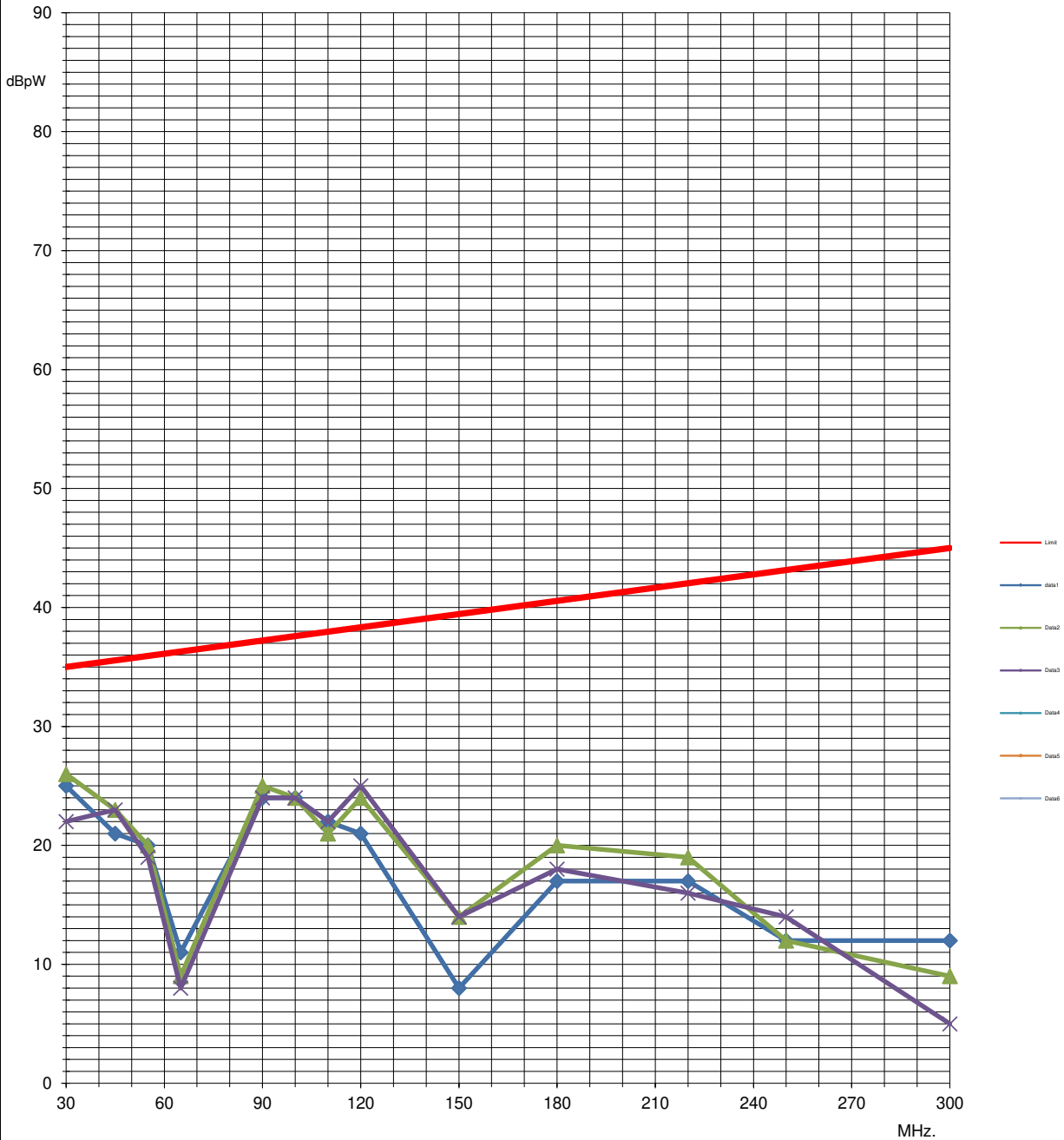
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Clamp Lüthi MdS 21



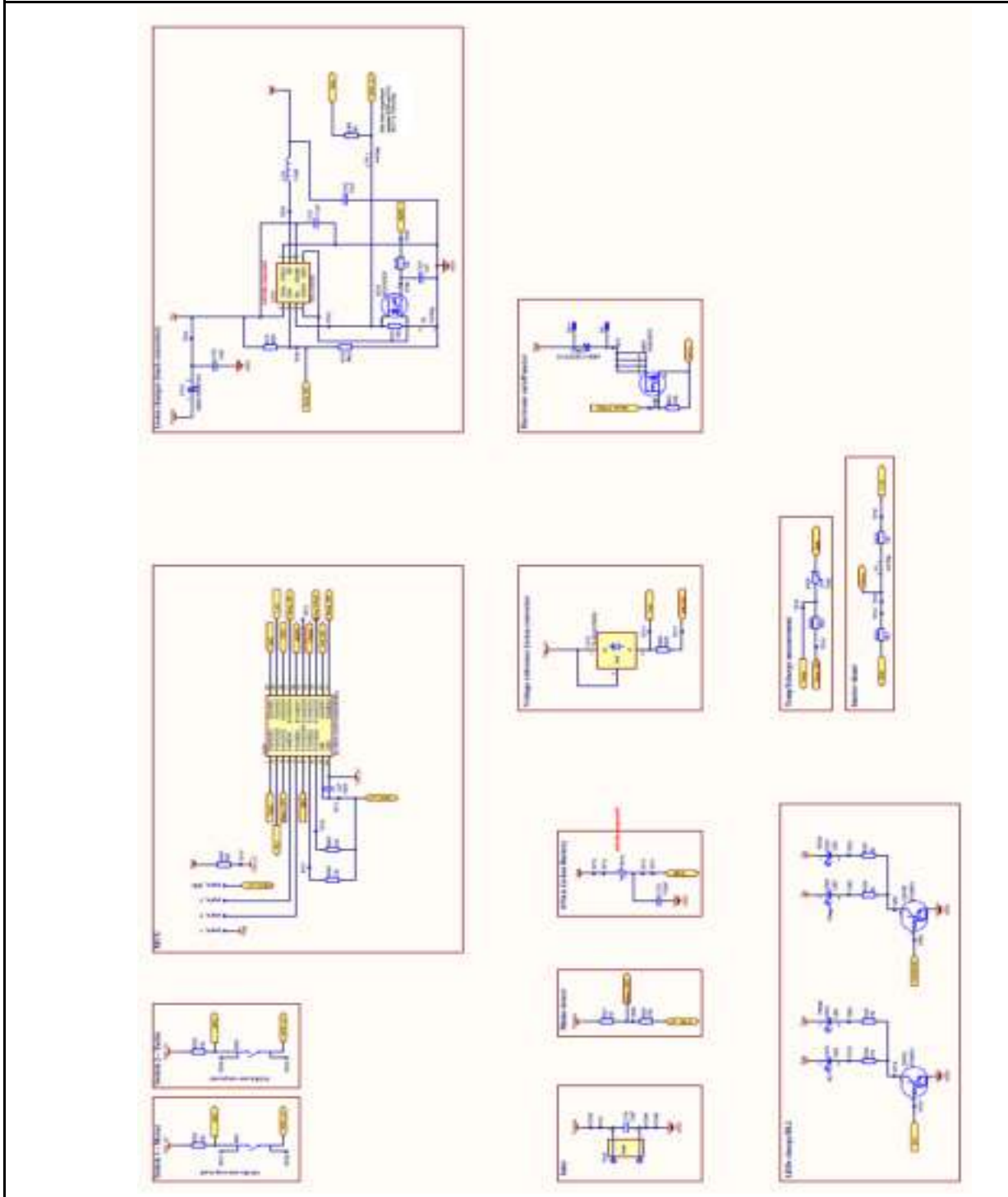
TESTRESULT

PASS

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Circuit diagram



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Manufacturer : Batam, Indonesia		50-60Hz

Flicker measurement, according to EN61000-3-3

Test equipment : California Instruments Interface PACS-1, AC Powersource 5001ix

THIS APPLIANCE FULFILLS THE REQUIREMENT WITHOUT TESTING

(conclusion based on electrical diagram / power-rating / number of switchings)

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Manufacturer : Batam, Indonesia	50-60Hz	

Flicker, Inrush measurement , according to EN61000-3-3

Test equipment : California Instruments Interface PACS-1, AC Powersource 5001ix

Determining the type of equipment (limit d_{max})	
X	Equipment with manual switching and max. r.m.s. current (including inrush current) ≤ 20 A. and the supply current after inrush is within a variation band of 1.5 A.
	Equipment without additional conditions.
	Equipment switched on manually or automatic more frequently than twice per day, and also has either a delayed restart (> 0.2 sec)
	Equipment attended whilst in use (hairdrier, vac cleaner, kitchen equipment such as mixers), or switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (>0.2 sec.) or manual restart, after a power supply interruption.

THIS APPLIANCE FULFILLS THE REQUIREMENT WITHOUT TESTING

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Manufacturer : Batam, Indonesia		50-60Hz

Harmonic-current measurement domestic appliances, according to EN 61000-3-2

Test equipment : California Instruments Interface PACS-1, AC Powersource 5001ix

THIS APPLIANCE FULFILLS THE REQUIREMENT WITHOUT TESTING

(conclusion based on electrical diagram / power-rating)

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Immunity test, according to EN55014-2

Test equipm.: EMtest UCS500M,Schaffner NSG2070,Schaffner NSG435,California Instruments PACS-1;5001ix

Classification of apparatus	
	category I
X	category II
	category III
	category IV

Tested criteria :			
X	Motor speed		Illumination
X	Switching		Display data
	Standby mode		Data storage
	Temperature		Sensor functions
	Power consumption		Audible signal
	Heating	X	Charge process
	Timing		

		Result	Comment on performance loss
EN 61000-4-2		Pass	
Electro Static	Contact : 4kV		
Discharge	Air : 8kV		
EN 61000-4-3		N.A.	
RF Electro	Level 2(3Vm)		
Magnetic Field			
EN 61000-4-4		Pass	
Fast	Level 2(1kV) 5/100kHz		
Transients	Pos. / Neg. for 2min.		
EN 61000-4-5		Pass	
Surges	L-L Level 2(1kV/2Ω)		
	L-E Level 3(2kV/12Ω)		
EN 61000-4-6		Pass	
Injected	0.15-250MHz.		
Current	Level 2(3V)mod.80%		
EN 61000-4-11		Pass	
Volt. Dips and Interruptions	All levels / durations		

TOTAL TESTRESULT	PASS
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Measurement Uncertainties

A measurement result only approximates the value of the measurand, because uncertainties in quantities that influence the measurement give rise to uncertainty in that result. The measurement uncertainty U describes an interval about the measurement result within which the value of the measurand is believed to lie with a specified level of confidence.

Accuracy of measurement

The reported expanded uncertainty is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

A lack of reproducibility caused by different interpretations of an ambiguous or incomplete test method, is not a contributor to the reported measurement uncertainty.

CISPR 16-4-2 uncertainty values (Ucisprr)

Ucisprr, is a measurement uncertainty achievable using well-calibrated quality test equipment which meets CISPR 16-1 specifications, and applying good engineering practice.

If the measurement uncertainty U is less than or equal to Ucisprr, compliance is deemed to occur provided no measured emission exceeds the emission limits.

If the measurement uncertainty U is greater than Ucisprr, compliance is deemed to occur provided no measured emission, increased by (U - Ucisprr), exceeds the emission limit.

Measurement	Equipment	Standard	Measurement uncertainty (dB)		
			Utest lab	Ucisprr	
EMISSION					
Mains terminal disturbance voltage 9 kHz – 150 kHz	LISN R&S, receiver PMM 9000	CISPR 15 / FCC 18	3.6	4.0	
Mains terminal disturbance voltage 9 kHz – 50 kHz	LISN R&S, receiver Schwarzbeck FMLK 1518	CISPR 15 / FCC 18	(14.0)	4.0	(Receiver not used below 150KHz)
Mains terminal disturbance voltage 50 kHz – 150 kHz	LISN R&S, receiver Schwarzbeck FMLK 1518	CISPR 15 / FCC 18	6.2	4.0	
Mains terminal disturbance voltage 0.15 - 30 MHz	LISN R&S, receiver PMM 9000	CISPR 11/13/14/15/22 FCC 15/18	3.6	3.6	
Mains terminal disturbance voltage 0.15 - 30 MHz	LISN R&S, receiver Schwarzbeck FMLK 1518	CISPR 11/13/14/15/22 FCC 15/18	3.8	3.6	
Mains terminal disturbance voltage 9kHz - 30 MHz	LISN R&S, receiver TESEQ SMR4503	CISPR 11/13/14/15/22 FCC 15/18	3.5	3.6	
Conducted emission: voltage probe 0.15-30MHz	Voltage probe, receiver PMM9000	CISPR 14	3.1	u.c.	
Conducted emission: voltage probe 0.15-30MHz	Voltage probe, receiver TESEQ SMR4503	CISPR 14	3.0	u.c.	
Disturbance power 30 - 300 MHz absorbing clamp	Clamp, receiver PMM9000	CISPR 13/14	4.4	4.5	
Disturbance power 30 - 300 MHz absorbing clamp	Clamp, receiver TESEQ SMR4503	CISPR 13/14	4.4	4.5	
Disturbance radiation 9 kHz - 30 MHz large loop	LLA, receiver FMLK 1518	CISPR 11 / 15	4.0	u.c.	
Disturbance radiation 9 kHz - 30 MHz large loop	LLA, receiver TESEQ SMR4503	CISPR 11 / 15	3.9	u.c.	
Disturbance 30-300MHz CDN method	CDN216, receiver PMM9000	CISPR 15 annex B	2.7		
Disturbance 30-300MHz CDN method	CDN216, receiver TESEQ SMR4503	CISPR 15 annex B	2.5		
Field strength measurement 30-1000MHz	Schwarzbeck VUMA 1521 antenna ETS3142E	CISPR 11/14	3.5		
Field strength measurement 30-1000MHz	TESEQ SMR4503 antenna ETS3142E	CISPR 11/14	3.0		
Inrush current	California Instruments model 5001ix	EN 61000-3-3	note 1)	±8 %	Calibrated by voltage measurement
Mains harmonic currents emission	California Instruments model 5001ix	IEC 61000-3-2	note 1)	See Annex A.2	harmonics not calibrated, software control
Mains voltage fluctuations and flicker	California Instruments model 5001ix	IEC 61000-3-3	note 1)	Clause 6.2	
EMF	ELT-400 model BN-2304/03 + 100cm ² probe	EN-IEC62233	4.4	25%	
IMMUNITY					
Electrostatic discharge	NSG 435	IEC 61000-4-2	note 1)	Annex E	See calibration report for uc
Radiated, RF-electromagnetic field	Radi Field Sensor + Radi Power heads	IEC 61000-4-3	2.8	Annex E	
Electrical fast transient/burst	UCS500N5	IEC 61000-4-4	note 1)		
Surge	UCS500N5	IEC 61000-4-5	note 1)		
Immunity to RF-conducted disturbances	NSG2070	IEC 61000-4-6	note 1)		
Power frequency magnetic field	Loop	IEC 61000-4-8	note 2)	Current measurement ±2%	
Voltage dips and interruptions	California Instruments model 5001ix	IEC 61000-4-11	note 1)	voltage levels checked by software	
Mains harmonic currents injected in the mains	California Instruments model 5001ix	IEC 61000-3-2	note 1)	See Annex A.2	harmonics not calibrated, software control

u.c. = under consideration

Note 1)

The Test Equipment meets the specified requirements in the standard (covered by calibration procedure)

Note 2)

Field check with EMF meter

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Manufacturer : Batam, Indonesia		50-60Hz

E.M.F. measurement according to IEC / EN62233 (2008)

Test equipment : Narda ELT-400 model BN2304/03 + Probe model BN2300/90.10



Polarisation of the magnetic flux B.



* = Max. field position



Measuring position	Test distance	W	Result
On cutter (mabuchi motor SH/SV)	0 cm.	5.01 %	Pass
On cutter (loda motor)	0 cm.	6.96 %	Pass
All surfaces (adapter)	30 cm.	1.31 %	Pass

TEST RESULT **PASS**

Assessed by KEMA
see 2082764.01-QUA/BST