Test Report

ELECTROMAGNETIC COMPATIBILITY

Issued to:

Client's Name:……	Kiwa Cermet S.p.a.
Address:……	Via Cadriano, 23, 40057 Granarolo dell'Emilia (BO)

Item under test:

Type of item:……	Jacketed boiling pan
Manufacturer:……	EUROTEC S.r.l. Div. MBM
Address:……	Strada Brescello-Cadelbosco 33/37/39, 42041 Brescello (RE)
Model:……	PEE7750I
Serial Number:……	DR 1230100

Test specification:

Reference standard:…..	EN 55014-1: 2017 EN 55014-2: 2015 EN 61000-3-2: 19 EN 61000-3-3: 13
Type of test:……	Electromagnetic Compatibility
Result:……	See result paragraph 2

Drafted by:…… Doct. Eng. M. Ricci (Firma)

Approved by:…… Doct. Eng. L. Spinelli (Firma)

Revision:…… 1st

Date of issue:…… 20/05/2020

Elettra s.r.l.

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1. SCOPE

This document has been drafted for the scope of verifying the conformity of the device with the prescriptions of the applicable harmonised standards in order to guarantee the presumption of conformity with the provisions deriving from the Electromagnetic Compatibility requirements.

Tests have been execute partially according to customer request as the device had already been tested according to previous revision of the standard.

The analysis conducted concerned the examination of the technical documentation referring to the device, the carrying out of a visual inspection in the aim of determining the applicable standards, and the performing of tests on the device. The performing of the tests took place under the conditions and according to the methods defined by the applicable standards. The analysis carried out concerns the device set up in conditions suitable for delivery to the customer: in the event of modifications it will be necessary to repeat the tests in order to validate the modifications made.

This report describes the results of the analysis carried on the described appliance and do not authorize to affix any mark. Affixing the name of the laboratory referring with the use, sale, commercial promotion or other aim of the described product is allowed only after the written authorization issued by Elettra.

The results of the measurements recorded in this document refer exclusively to the example examined and in the conditions of the measurements specified. Any extension of the results to other examples or in other measuring conditions shall not enter within the scope of this document.

2. CONFORMITY ASSESMENT

EN 55014 - Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus	
Testing Laboratory……..……:	ELETTRA s.r.l.
Address……..:	Via Matteucci, 10 50041 Calenzano (Florence) - Italy
Client's name……..……:	Kiwa Cermet S.p.a.
Address……..……:	Via Cadriano, 23, 40057 Granarolo dell'Emilia (BO)
Manufacturer's name……..…:	EUROTEC S.r.l. Div. MBM
Address……..……:	Strada Brescello-Cadelbosco 33/37/39, 42041 Brescello (RE)
Test specification:	
Standard……..…:	EN 55014-1: 2017 EN 55014-2: 2015 EN 61000-3-2: 19 EN 61000-3-3: 13
Test procedure……:	See paragraph 11
Non-standard test method……...:	NA
Result……:	☒ PASS ☐ PASS with Note[1] ☐ FAIL [2]
[1]Note about conformity……..:	NA
[2]List of non conformity……..:	NA
Following the list of non conformity according to standard	

3. IDENTIFICATION AND FEATURES OF EUT

EUT Description *(Data provided by the customer not under the responsability of the laboratory)*

Type of item :……	Jacketed boiling pan
Trademark:……	MBM
Manufacturer:……	EUROTEC S.r.l. Div. MBM
Address:……	Strada Brescello-Cadelbosco 33/37/39, 42041 Brescello (RE)
Model: ……	PEE7750I
Serial number:……	DR 1230100

EUT classification *(Data provided by the customer not under the responsability of the laboratory)*

Type of power supply:……	AC
Rated voltage:……	400V 3N or 380-415V 3N
Rated frequency:……	50/60Hz
Rated current/power:……	9000 W
Installation:……	Fixed
Mains connection:……	Not detachable cable
Protection against indirect contacts:….	Class I
IP degree:……	X5

Accessories provided with EUT

Use[1]	Product type	Manufacturer	Model	Electrical characteristics

[1]Note: Use one of the following:
AE - Auxiliary/Associated Equipment
SIM - Simulator (Not Subjected to Test)

Document provided with EUT

Document type	Title	Revision/ Date of issue
☐ User manual		

4. PHOTO OF EUT

EUT	
	
Front side	**Rear side**
	
Left side	**Right side**
	

EUT label


MBM Brescello Italy
CE Mod. PEE7750I
Marketed Mod.
Serial N° DR 1230100
CE
IPX5
50/60 Hz
380-415 V 3N ~
9000 W
Anno/Year
2020
MADE IN EU

5. TEST AND SAMPLING

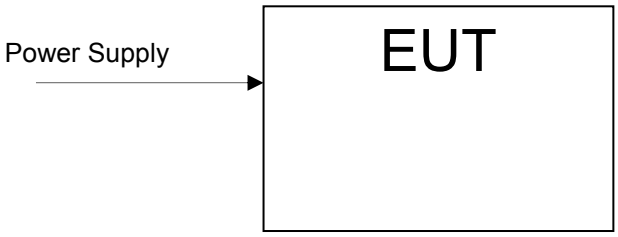
Date of receipt: ……..	04/05/2020
Date of the test:……..	04/05/2020 – 07/05/2020
Internal laboratory number:	22320
Environmental laboratory conditions:...	Temperature: 24±4°C; Humidity: 45±15% r.h. Atmospheric pressure: 860hPa – 1060hPa
Sampling: ……..	Device tested was picked up by the manufacturer
Possible test case verdict	
- Test not apply	NA
- Test does meet the requirements	P (Pass)
- Test does not meet the requirements	F (Fail
- Test not executed	NE
** = "test not accredited by PJLA"* *Test reported in this report marked by wording: "Not accredited by PJLA" are not part of the Perry Johnson L. A. accreditation of this laboratory*.	

6. REFERENCE DOCUMENTS

The considerations contained within this document are intended to verify compliance with the requirements of the following standards:

EN 55014-1	Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus. Part 1: Emission - 2017
EN 55014-2	Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus. Part 2: Immunity - Product family standard - 2015
EN 61000-3-2	Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase) - 2019
EN 61000-3-3	Electromagnetic compatibility (EMC) Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection - 2013

7. EUT PORT



Port	Port Type [1]	Rated voltage	Cable type	Cable lenght	Cable shielded
Enclosure	NE	--	--	--	--
Power supply	AC	380/415Vac 50/60Hz	--	<3m	No

[1]Note: Use one of the following
AC = AC Power port
DC = DC Power port
I/O = Signal input or output port
NE = Non Electrical port
TP = Telecommunication port

8. EUT CLASSIFICATION

EUT setup configuration:.....	☐ Table ☒ Floor
EUT category:.....	☐ Category I – EUT containing no electronic control circuit. According to Art. 7.2 of EN 55014-2, to be compliant with the requirements of immunity without testing.
	☐ Category II - Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus containing electronic control circuitry with no clock frequency higher than 15 MHz
	☐ Category III – EUT which in normal use, is not connected to a power network and has no cables attached.
	☐ Category IV - All other EUT
Emissions classification	
Conducted and radiated emission limit:	See EN55014-1
Intentional transmitter over 1GHz	☒ No – Radiated emission test up to 1GHz
	☐ Yes – Radiated emission test up to 6GHz

Emission test applicable	**Yes/No/NE**
Harmonic current emission:.....	YES
Voltage fluctuation and Flicker:.....	YES
Click:.....	YES
Conducted emission:.....	YES
Radiated emission:.....	YES
Radiated power:.....	NE
Immunity test applicable	**Yes/No/NE**
Radiated RF electromagnetic Fields	NE
Electrostatic Discharges (ESD)	NE
Conducted Disturbances, induced by RF fields :.....	NE
Electrical Fast Transients and bursts	NE
Surges:.....	NE
Voltage Dips, Interruptions, and variations :.....	NE

9. EUT OPERATIVE CONDITIONS AND PERFORMANCE

Operative condition:	EUT supply at rated voltage and test in all following condition: - Operating mode
Performance verification for immunity test:	--

Evaluation criteria for immunity test

The device under test must continue functioning without degradation of the essential performances defined by manufacturer and must remain safe, under the conducted and radiated disturbances applied. The following degradations associated with essential performance and safety shall not be allowed:

- component failure;
- changing of set parameters;
- changing of operating mode;
- false alarms;
- cessation or interruption of any intended operation;
- initiation of any unwanted operation.

Relating to the EUT the essential performance are so defined:

Criterion A:

The device, during the tests, maintains the set functional mode. It is not allowed:

- total or partial loss of functionality;
- reset;
- variation in reading of inputs state respect to set configuration;
- communication rate not less than 8Mb/s;

Functional verification shall be performed with pass result.

Criterion B:

The device, at the end of the tests, maintains the set functional mode. It is not allowed:

- total or partial loss of functionality;
- reset;
- variation in reading of inputs state respect to set configuration

Criterion C:

Partial loss of performance with complete recover of correct functioning with operator activities

10. TEST INSTRUMENTS

INSTRUMENTS LIST

Internal Number	Description	Manufacturer	Model	Serial
21	Burst/Surge/Dips generator	HOFBAUER ELECTRONIC	CEG-4508	1258
21b	Capacitive clamp	TESEO	KKS-2700	--
63	Loop antenna	TESEO	LAS1	--
73	Attenuator 6db	EM TEST	ATT6/75	1001-26
74	CDN	EM TEST	M2/M3	0503-01
75	Calibration Set	EM TEST	CWS-CAL R100	0118; 0116
77	Function generator	HP	33120A	E13266 US36026774
78	PowersupplyAc/Dc	CHROMA ATE INC.	C-61602	ABP000000204
86	Low frequency Immunity field test system	HOFBAUER	8LST-4510	1414
88	Pulse generator	SCHAFFNER	NSG505	4578727
120	CDN	EM TEST	CDN S9	0405-01
133	Variac	METREL	HSN0303	01833
143	Field meter	CHAUVIN ARNOUX	CA42	100405AEK
144	Loop antenna	ELECTROMETRICS	ALR-25	444
149	Rf generator	RHODE&SCHWARZ	SM300	1147.1498.03.100029
150	Antenna Horn	A.H. SYSTEMS INC.	SAS-571	823
151	Anechoicchamber	FRANKONIA	CHC	ELETTROLAB
155	Directioncoupler	WERLATONE	C3910	29665
156	Directioncoupler	WERLATONE	C6187-10	32529
160	High voltage transformer	LEF	837 100/1000	0708
169	Attenuator	MINICIRCUITS	BW N10 W5	
170	Attenuator	MINICIRCUITS	BWN20 W5	-
179	Harmonic and Flickeranalyzer	EM TEST	DPA 500	V0602101051
199	CDN M5	EM TEST	2MCDNM5/32A	1008-14
203	Amplifier	Krhohn-Hite	7500	15/04
214	Amplifier	FRANKONIA	FLG-30D	1064
225	Spectrumanalyzer	RHODE&SCHWARZ	FSL6	100568
253	Horn Antenna	A-INFOMW	JXTXLB-10125	J2031100925002
256	Field meter	PMM-NARDA	8053-B-2004-40	262WL80471
257	Probe	PMM-NARDA	EHP-50C	352WN80535
259	Van DerHoofden Head	AFJ	VDH30	--
261	RfAmplifier	SPIN ELECTRONICS	PA-0180-250	01-031-011
264	AcPower Source	EM TEST	NETWAVE 7	V1049108071
265	Directionalcoupler	WERLATONE	C5425	8078
269	Pulse attenuator	AGILENT	11947A	3107A04294
274	Tripod	SCHWARZBECK	AM9144	--
277	Tester	FLUKE	115	17970612
282	Lisn	NARDA	PMM L1-150M	000WX20103
283	Lisn	NARDA	PMM L1-150M	000WX20102
311	Antenna	SCHWARZBECK	VHBC9133BALUN BBAE9179	9133-128
322	Poweramplifier	HUGHES	8010H02F00	240
335	Conductedimmunity generator	EM TEST	UCS500	P1330120726

Internal Number	Description	Manufacturer	Model	Serial
336	Receiver	ROHDE& SCHWARZ	ESR7	1316.3003K07-101192-ZA
350	Trilog antenna	ROHDE& SCHWARZ	HL562E	100767
353	Lisn	NARDA	L2-16	000WX40511
354	Multimeter	Fluke	115	26511351
361	Antenna Loop	SCHWARZBECK	FESP5133	5133-038
362	Preamplifier	Agilent	87405C	MY47010541
386	CDN	ELETTRA	EL.CDNS.03	--
394	Receiver	NARDA	9010F	030WW50909
404	Absorbingclamp	FCC	F-201-23	09140
413	Tape	SO.DI.FER	0015.79	8004033135311
416	Three-phase CDN	ELETTRA	EL.CDNS.01	--
424	RF interference generator	EM TEST	CWS500N1.4	P1545166728
425	ESD generator 30KV	EM TEST	ESD30N/P30N	P1442142207/P1432137710
426	Multifunction generator	EMC PARTNERS	IMU4000	Generator: 1502 Basis: 1649
427	CDN 61000-4-16	EMC PARTNERS	CN16	1531
430	Directionalcoupler	WERLATONE	C10917-10	111841
433	Loop Antenna	ELETTRA	33 SPIRE	
434	LISN 3F	PMM NARDA	L3-32	233WT60913
439	Variac	K-FACTOR	VAM10F-1N	217053256\
449	Filter	WAINWRIGHT INSTRUMENTS	WHKX3.0/18G-12SS	201 101696
453	Capacitive Clamp	EM TEST	HFK	0795-10
456	Burst CDN	HAEFELY	FP16/3-1	081114-25-88
457	Surge CDN	EM TEST	CNV 504	0502-02
459	Signal analyzer	ROHDE & SCHWARZ	FSV30	101203
473	Rf amplifier	AMPLIFIER RESEARCH	250W1000	27797
474	Power meter	DARELL INSTRUMENTS	RPR3006W	17I00015SNO40
480	Power meter	HEWLETT PACKARD	E4418B	GB39512445
487	EmClamp	EM TEST	EM101	35183
492	Turning table and controller	INNCO SYSTEM Gmbh	DS1200-HA + CO3000-1D	DS1200/425/44000718/P + CO3000/1123/44000718/P
496	Table for anecoic chamber	INNCO	PT 1208-SD	--
506	Antenna	Schwarzbeck	BBHA 9120 D	9120D-2092
507	CDN surge	SCHAFFNER	CDN113	134
508	CDN	SCHLODER	CDN-RJ45-S	19902063-0101
510	Motorized variac	EM TEST/AMETEK	VARIAC NX1-260-16	P1915228930
515	Voltage stabilizer	K-FACTOR	AC VOLTAGE STABILIZER	BK1102219-5
552	Harmonic/Flicker analyzer	YOKOGAWA	WT3003E	91VB09244
562	Reference impedance	Zimmer	NI2415-3	A1912124
563	SIgnal generator	AEROFLEX	IFR3416	341006/514
571	AC power supply	CALIFORNIA INSTRUMENTS	METEK AST6003A1D-A000A0A	1950A03849
572	AC power supply	CALIFORNIA INSTRUMENTS	AMETEK AST6003A1D-A000A1B	1950A03850

Supplementary information: Instruments used are referred to national standards and calibrated according to calibration plan stated by internal quality system.

ACCESSORIES AND CABLES LIST

Internal Number	Description	Manufacturer	Model	Serial
Cable 13	Coax 50Ω RG213 att.	--	--	--
Cable 23	Coax 50Ω - 6m	Suhner	NTEQ42-N-50N	249
Cable 24	Coax 50Ω - 3m	Suhner	NTEQ42-N-50N	247
Cable 33	Coax 50Ω RG58 - 6m	Spin Electronics	SCBL-RG233-06-BNBN	--
Cable 36	Coax 50Ω RG213 - 1m	--	--	--
Cable 38	SMA – 1m	Radiall	1308	R284C0351054
Cable 39	SMA – 1m	Radiall	1308	R284C0351054
Cable 40	SMA – 1m	Radiall	1308	R284C0351054
Cable Loop	Coax 50Ω - 6,2m	--	--	--
Cable Clamp	--	--	--	--
ACC 01	Adapter for preliminary test of LISN 32A	--	--	--
ACC 08	Artificial hand	--	--	--
ACC 10	Adapter for preliminary test of LISN 16A	--	--	--
ACC 11	Adapter for preliminary test of UCS	--	--	--
EL.DPA	Accessory for preliminary verification of DPA500	--	--	--

11. MEASUREMENT UNCERTAINTIES AND PROCEDURES

TEST UNCERTAINTIES

Test	Expanded uncertainty	Note
Conducted emissions (9kHz÷150kHz) Conducted emissions (150kHz÷30MHz)	±3,8dB ±3,4dB	1
Disturbance power (30MHz÷300MHz)	±5,1dB	1
Radiated emissions - range 30MHz ÷230MHz - range 230MHz ÷1GHz - range 1GHz ÷6GHz	 ±7,6dB ±6,7dB ±4,0dB	1
Electromagnetic field EMF	±18%	1
Harmonic current	±5,8%	1
Flicker and voltage fluctuation	±6,3%	1
Insertion loss	±3,4%	1
Radiated magnetic field	±3,2%	1
Electromagnetic immunity radiated field	±1,5dB	1
Immunity to radiated magnetic fields at line frequency	±14%	1
Rf injected current immunity	±2,2dB	1
Burst immunity		2
Suge immunity		2
ESD immunity		2
Dips immunity		2
Voltage variations immunity		2
Immunity to low voltage transients		2

Note:
- Note 1: the expanded uncertainty evacuate according to EN 55016-4-2 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a confidence level of p = 95%.
- Note 2: it has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor = 2.

PASS/FAIL criteria decision rule: the test results are compared with the relative limits. The results can be classified as "compliant" if the measured values were all below the limits or "non-compliant" if the limits were exceeded even for a single harmonic frequency. In this assessment, the measurement uncertainty is not taken into account, when the calculated uncertainty values are lower than those reported in the EN 55016-4-2 standard, or, if they are higher, the margin from the limit is considered equal to the difference between the uncertainty indicated by the standard and the calculated value.

TEST PROCEDURES

Code	Title	Revision
EM001	Harmonic current	2
EM002	Flicker	2
EM003	Conducted emission	8
EM004	Burst immunity	6
EM005	Surge immunity	6
EM007	ESD immunity	6
EM008	Radiated field immunity	2
EM009	Immunity to current inducted by electromagnetic fields	3
EM010	Dips and variation voltage	2
EM011	Immunity to magnetic field	1
EM012	Magnetic field emission	1
EM013	Radiated emission	1
EM014	Radiated power	1
EM015	Insertion loss	0

12. CORRECTIVE ACTION TAKING DURING TEST

Test	Corrective action[1]	Brand/Model	Photo
Note: [1] All tests were executed after corrective action			

13. TEST RESULTS

Type of test	Reference standard	Test results	Description
Current harmonics	EN 61000-3-2 :19	☒ P ☐F ☐NA ☐NE	Par. 13.1
Flicker	EN 61000-3-3 :13	☒ P ☐F ☐NA ☐NE	Par. 13.2
Click	EN 55014-1:17	☐ P ☐F ☐NA ☒NE	Par. 13.3
Measurement of conducted emissions	EN 55014-1:17	☒ P ☐F ☐NA ☐NE	Par. 13.4
Measurement of radiated emissions	EN 55014-1:17 *	☒ P ☐ P with note [1] ☐F ☐NA ☐NE	Par. 13.5
Radiated power	EN 55014-1:17 *	☐ P ☐F ☐NA ☒NE	Par. 13.6
Immunity to EM Radiated Fields	EN 61000-4-3 :06 / A1 :08 /A2 :10	☐ P ☐F ☐NA ☒NE	Par. 13.7
Immunity to electrostatic discharges	EN 61000-4-2 :09	☐ P ☐F ☐NA ☒NE	Par. 13.8
Immunity to currents induced by radio frequency fields.	EN 61000-4-6 :14	☐ P ☐F ☐NA ☒NE	Par 13.9
Immunity to bursts	EN 61000-4-4 :12	☐ P ☐F ☐NA ☒NE	Par. 13.10
Immunity to voltage impulses	EN 61000-4-5 :14 /A1 : 17	☐ P ☐F ☐NA ☒NE	Par. 13.11
Immunity to voltage gaps and variations	EN 61000-4-11:04 /A1: 17	☐ P ☐F ☐NA ☒NE	Par 13.12

[1] Note about conformity……..:

Difference between radiated emission test values and reference limit is less than 2,3 db in frequency range 30MHz-230MHz and less than 1,4 db in frequency range 230MHz-1GHz. This value is equal to the difference between the uncertainty indicated by the standard EN 55016-4-2 and the uncertainty calculated value of radiated emission test. For more information see paragraph 11

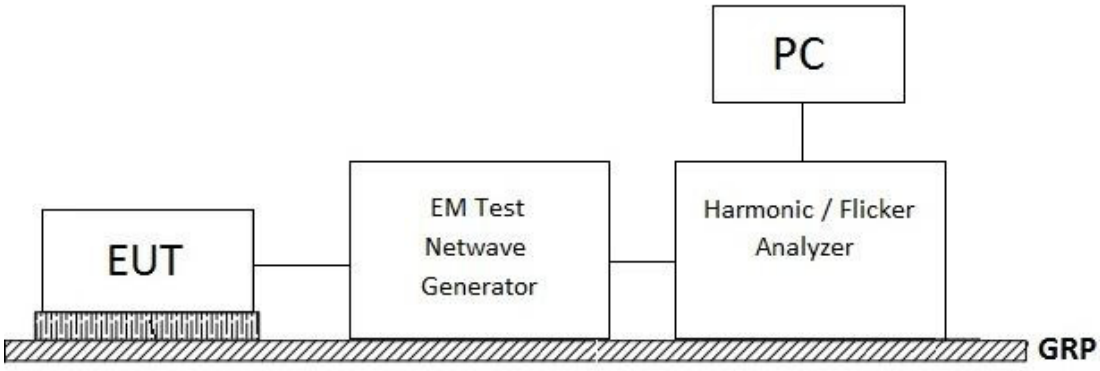
13.1 Harmonic current

Reference standard:	EN 61000-3-2
Port under test:	AC Power Supply
EUT operative conditions:	see par. 9
Instruments used:	179; 264; 552; 562; 571; 572
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa
Procedure:	The measurements were carried out after the device had reached its thermal conditions; the stationary and transitory current harmonics were evaluated
Test time:	10 sec

Limits:
Class A

Harmonic order n°	Limit (A)
Odd harmonics	
3	2,3
5	1,14
7	0,77
9	0,4
11	0,33
13	0,21
15 < = n < = 39	0,15x (15/n)
Even harmonics	
2	1,08
4	0,43
6	0,30
8 < = n < = 40	0,8 x (8/n)

Test Set-up:

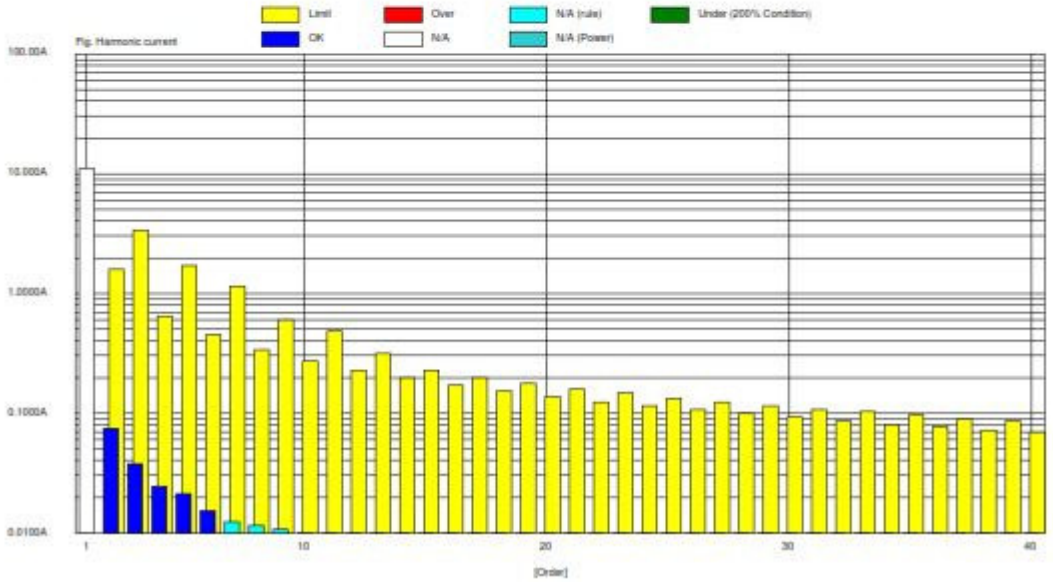


Test results:

Voltage supply	Result
400V/50Hz	☒ P ☐ F ☐ NA ☐ NE
400V/60Hz	☐ P ☐ F ☒ NA ☐ NE

Harmonic current at 400V_{ac}/50Hz

Order	Measure[A]	Limit[A]	Margin[%]	Order	Measure[A]	Limit[A]	Margin[%]
1	11.2973			2	0.0739	1.6200	95.4
3	0.0377	3.4500	98.9	4	0.0244	0.6450	96.2
5	0.0214	1.7100	98.7	6	0.0153	0.4500	96.6
7	0.0126	1.1550	98.9	8	0.0115	0.3450	96.7
9	0.0109	0.6000	98.2	10	0.0088	0.2760	96.9
11	0.0080	0.4950	98.4	12	0.0078	0.2300	96.6
13	0.0073	0.3150	97.7	14	0.0061	0.1971	96.9
15	0.0062	0.2250	97.3	16	0.0060	0.1725	96.5
17	0.0055	0.1985	97.2	18	0.0049	0.1533	96.9
19	0.0051	0.1776	97.1	20	0.0048	0.1380	96.5
21	0.0044	0.1607	97.3	22	0.0041	0.1255	96.8
23	0.0044	0.1467	97.0	24	0.0039	0.1150	96.6
25	0.0037	0.1350	97.3	26	0.0037	0.1062	96.5
27	0.0039	0.1250	96.9	28	0.0034	0.0986	96.6
29	0.0033	0.1164	97.1	30	0.0034	0.0920	96.3
31	0.0035	0.1089	96.8	32	0.0030	0.0862	96.6
33	0.0032	0.1023	96.9	34	0.0031	0.0812	96.2
35	0.0029	0.0964	97.0	36	0.0028	0.0767	96.6
37	0.0028	0.0912	96.9	38	0.0027	0.0726	96.3
39	0.0024	0.0865	97.2	40	0.0023	0.0690	96.6



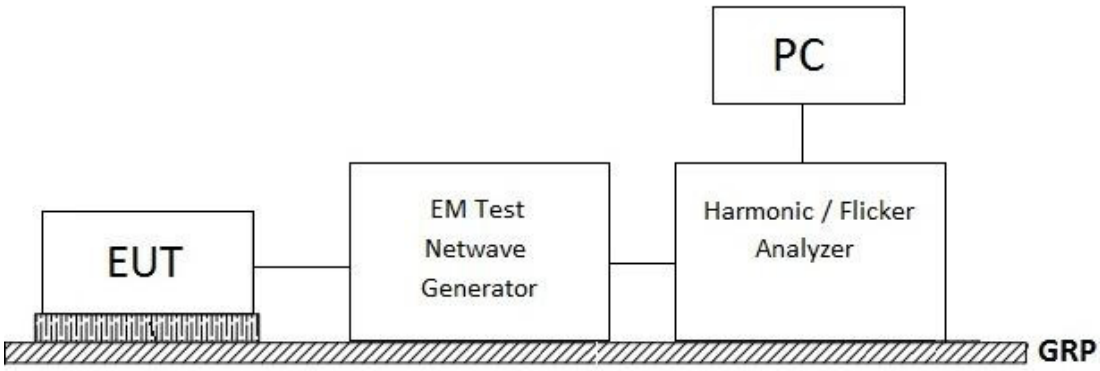
13.2 Flicker

Reference standard:	EN 61000-3-3
Port:	AC Power supply
EUT operative conditions:	see par. 9
Instruments used:	179; 264; 552; 562; 571; 572
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa
Procedure:	Seeing that the nature of the functioning is such that the voltage variations may be caused by manual manoeuvres and the functioning cycle lasts less than 120 minutes, the requirements for Plt are not applied
Test time:	120 min

Limits:

Measurement time	PLT	PST	dt	dmax	dc
120 minutes	0,65	1	3,3% less then 500ms	4% Vn	3,3% Vn
Note: Vn = EUT rated voltage					

Test Set-up:



Test results:

Voltage supply	Result
400V/50Hz	☒ P ☐ F ☐ NA ☐ NE

Flicker 400V_{ac}/50Hz

Regulation	:	IEC61000-3-3 Ed3.0 IEC61000-4-15 Ed2.0
Interval	:	10Min0Sec
Model	:	YOKOGAWA WT3000
Wiring	:	three-phase 4wire
Voltage Range	:	600.00V
Set Voltage	:	230V
Set Frequency	:	50Hz
Voltage U3	:	229.63V
Frequency U3	:	50.002Hz
Element	:	3
dmin	:	0.20%

PASS (Under dmin)

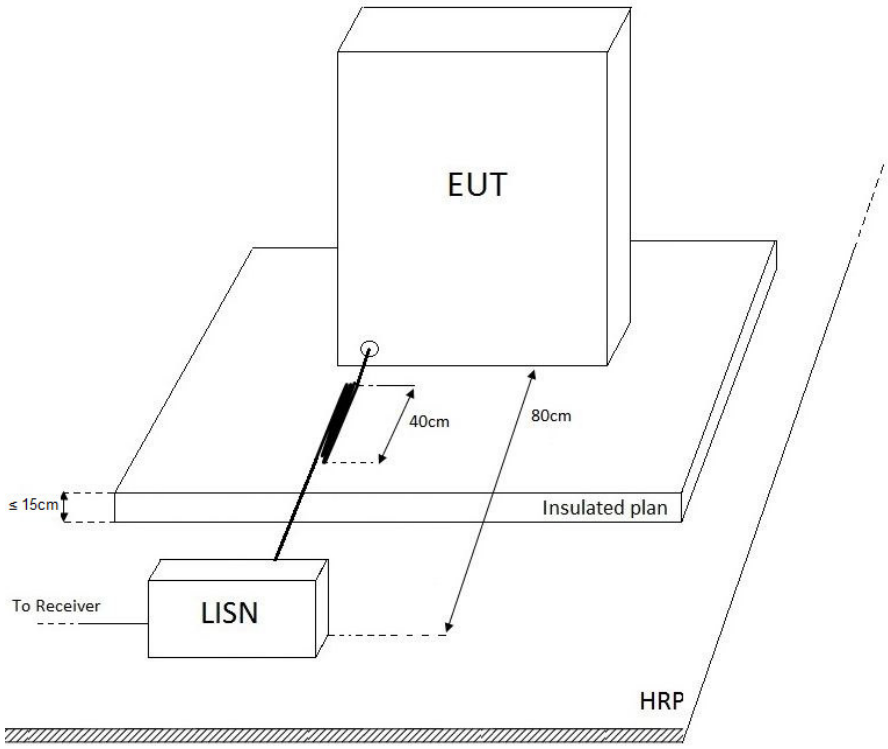
Element3	: Pass(Under dmin)
dc (3.30%)	: Pass
dmax(4.00%)	: Pass
Tmax(500ms)	: Pass
Pst (1.00)	: Pass
Plt (0.65)	: Pass

No.	dc[%]	dmax[%]	Tmax[ms]	Pst	Plt
1	0.00	0.00	0.00	0.07	0.03

13.3 Click

Reference standard:	EN 55014-1
Port:	AC Power Supply
EUT operative conditions:	See par. 9
Instruments used:	336; 353; 269; 78 133; 277; 413; Cables 33; 13
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa
Disposition:	On insulated plane over the reference ground
Cable:	Excess of cable than 1m wound in skein of 40cm
Test time:	120 minutes

Test Set-up floor EUT:



Test results:

Frequency	Result
150kHz	☐ P ☐ F ☐ NA ☒ NE
500kHz	☐ P ☐ F ☐ NA ☒ NE
1,4MHz	☐ P ☐ F ☐ NA ☒ NE
30MHz	☐ P ☐ F ☐ NA ☒ NE

13.4 Conducted radio-frequency emission

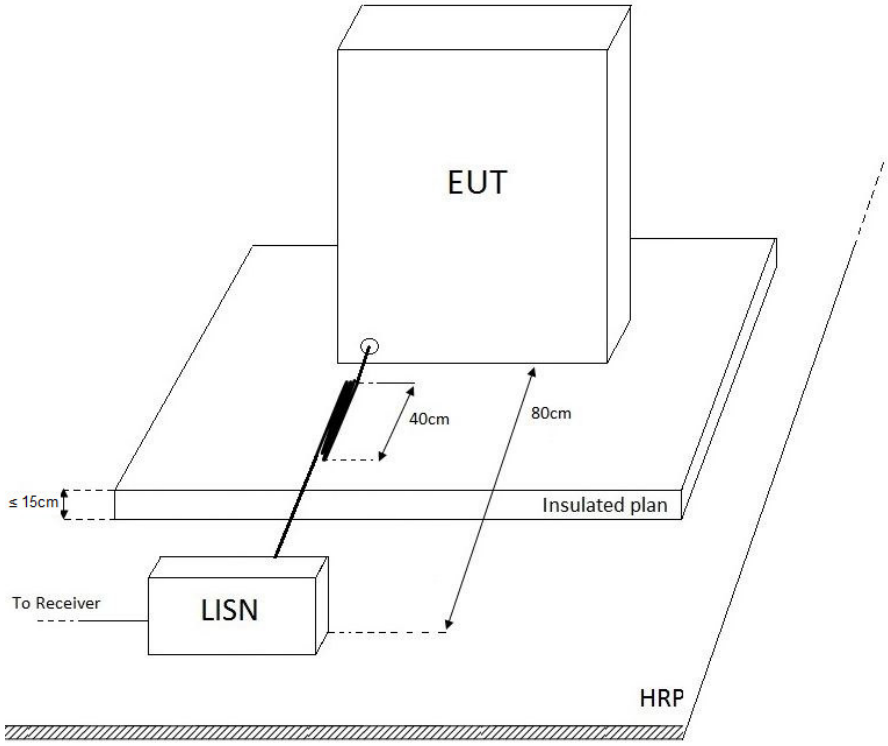
Reference standard:	EN 55014-1		
Port:	AC Power Supply		
EUT operative conditions:	See par. 9		
Instruments used:	**Frequency range**	**Instruments**	**Cables and accessories**
	150kHz – 30MHz	336; 353; 269; 78 133; 277; 413	Cables 33; 13;
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Polarity:	L and N		
Disposition:	On insulated plane over the reference ground		
Cable:	Excess of cable than 1m wound in skein of 40cm		

Limits:

Main port

Frequency	Average value (dBμV)	Quasi-peak (dBμV)
0,15÷0,5 MHz	59-46	66-56
0,5÷5 MHz	46	56
5÷30 MHz	50	60

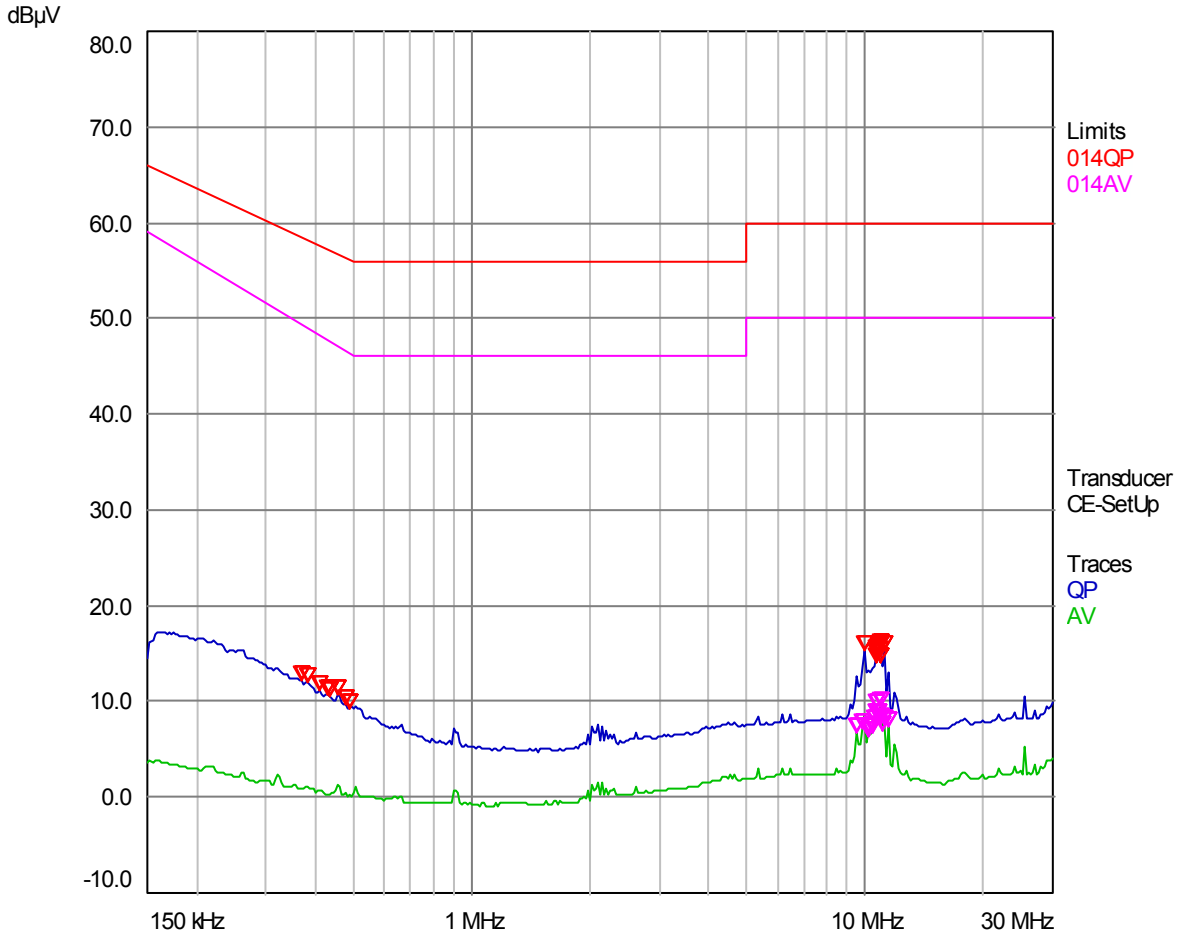
Test Set-up floor EUT:



Test results:

Voltage supply	Result
400V/50Hz	☒ P ☐F ☐NA ☐NE
110V/60Hz	☐ P ☐F ☒NA ☐NE

Conducted emissions (150kHz-30MHz) – 400Vac 50Hz



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	10.89825	9.44	50.00	-40.56		
2 AV	10.65075	9.19	50.00	-40.81		
2 AV	10.6845	8.30	50.00	-41.70		
2 AV	10.8375	8.18	50.00	-41.82		
2 AV	10.73625	8.17	50.00	-41.83		
2 AV	10.78575	8.17	50.00	-41.83		
2 AV	10.93875	7.77	50.00	-42.23		
2 AV	10.58325	7.60	50.00	-42.40		
2 AV	11.14575	7.49	50.00	-42.51		
2 AV	10.9905	7.48	50.00	-42.52		
2 AV	11.5305	7.36	50.00	-42.64		
2 AV	9.90825	7.10	50.00	-42.90		
2 AV	11.04	7.03	50.00	-42.97		
2 AV	10.482	6.99	50.00	-43.01		
2 AV	10.40325	6.83	50.00	-43.17		

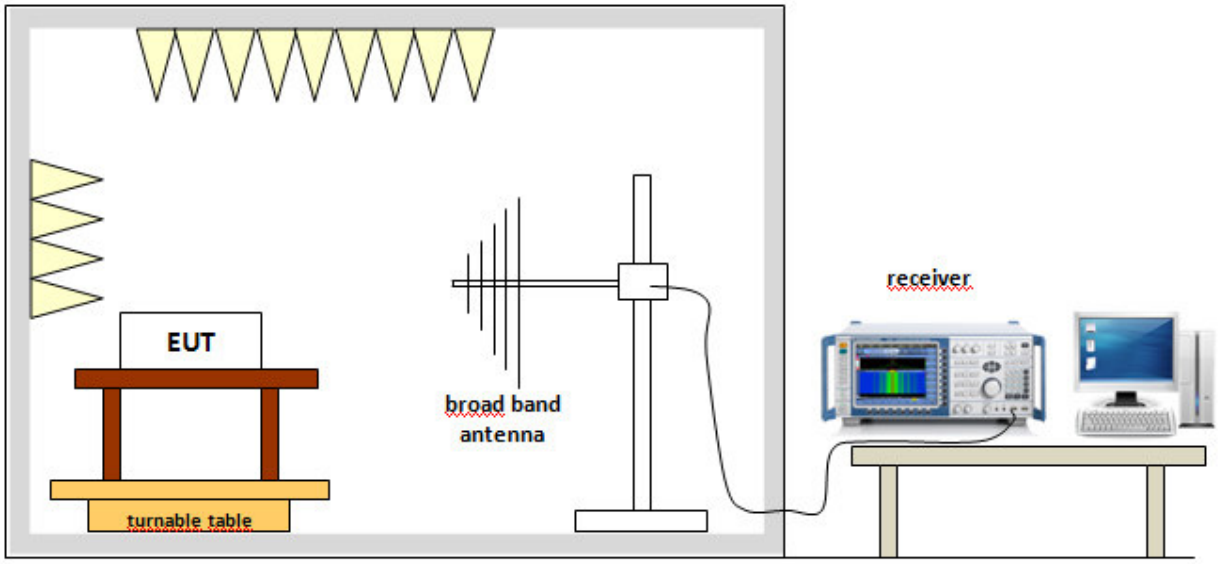
13.5 Radio-frequency emission *

Reference standard:	EN55014-1		
Port:	Enclosure		
EUT operative conditions:	See par. 9		
Instruments used:	**Frequency range**	**Instruments**	**Cables and accessories**
	30MHz – 1GHz	336; 151; 350; 274; 413; 492; 496	Cables 23, 24
	1GHz – 6GHz	336; 151; 350; 274; 362; 413; 492; 496	Cables 23, 24
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Antenna from EUT:	3m		
Polarization:	Horizontal and vertical		
Sides:	4 sides		
Cable disposition:	Towards the floor		

Limits:

Frequency	Average value (dBμV/m)	Quasi-peak value (dBμV/m)	Peak value (dBμV/m)
30÷230 MHz	--	42-35 (3m)	--
230÷1000 MHz	--	42 (3m)	--
1000÷3000 MHz	50 (3m)	--	70 (3m)
3000÷6000 MHz	54 (3m)	--	74 (3m)

Test Set-up for measurements in FAR (fully anechoic room) site:

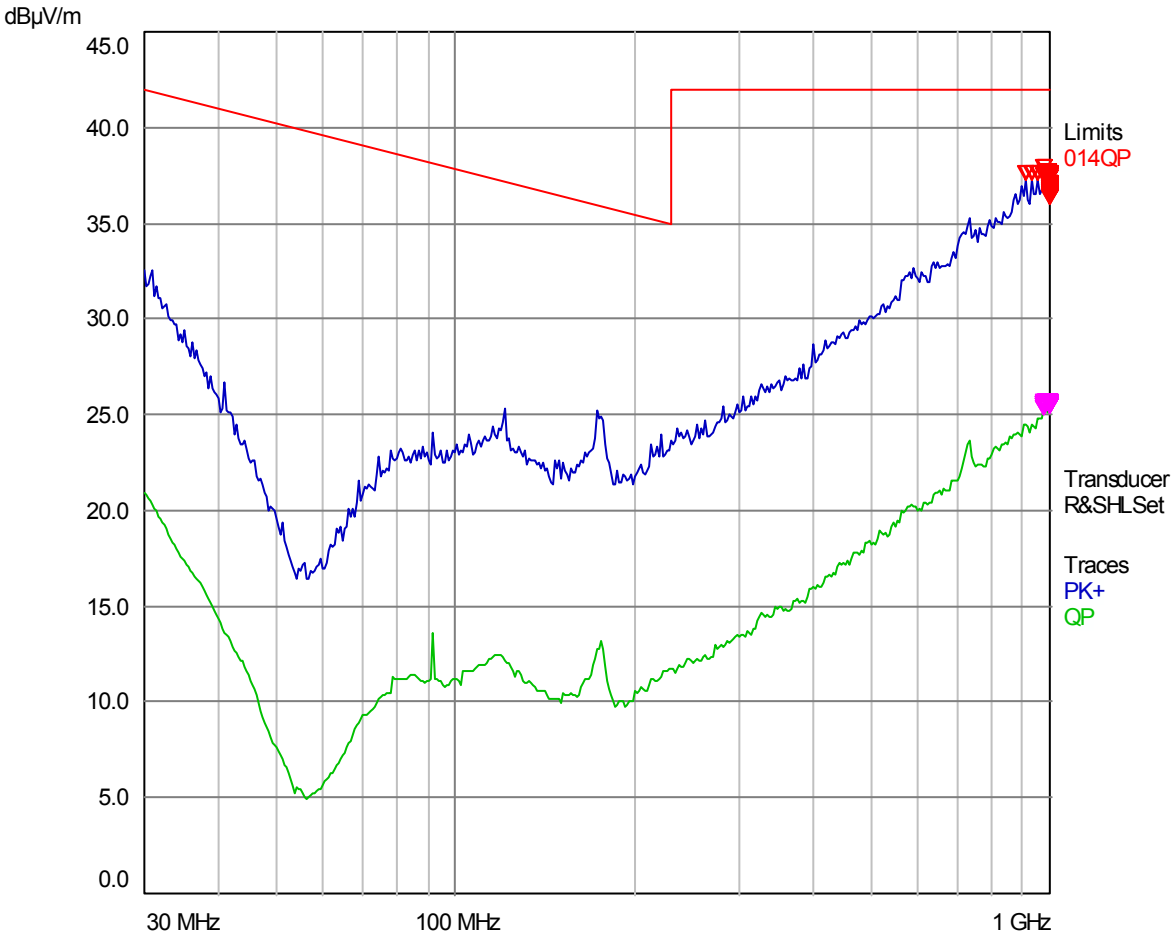


Test results:

Frequency Range	Antenna	Result
30MHz – 1GHz	Vertical	☒ P ☐ P with note [1] ☐F ☐NA ☐NE
	Horizontal	☒ P ☐ P with note [1] ☐F ☐NA ☐NE
1GHz – 6GHz	Vertical	☐ P ☐F ☒NA ☐NE
	Horizontal	☐ P ☐F ☒NA ☐NE

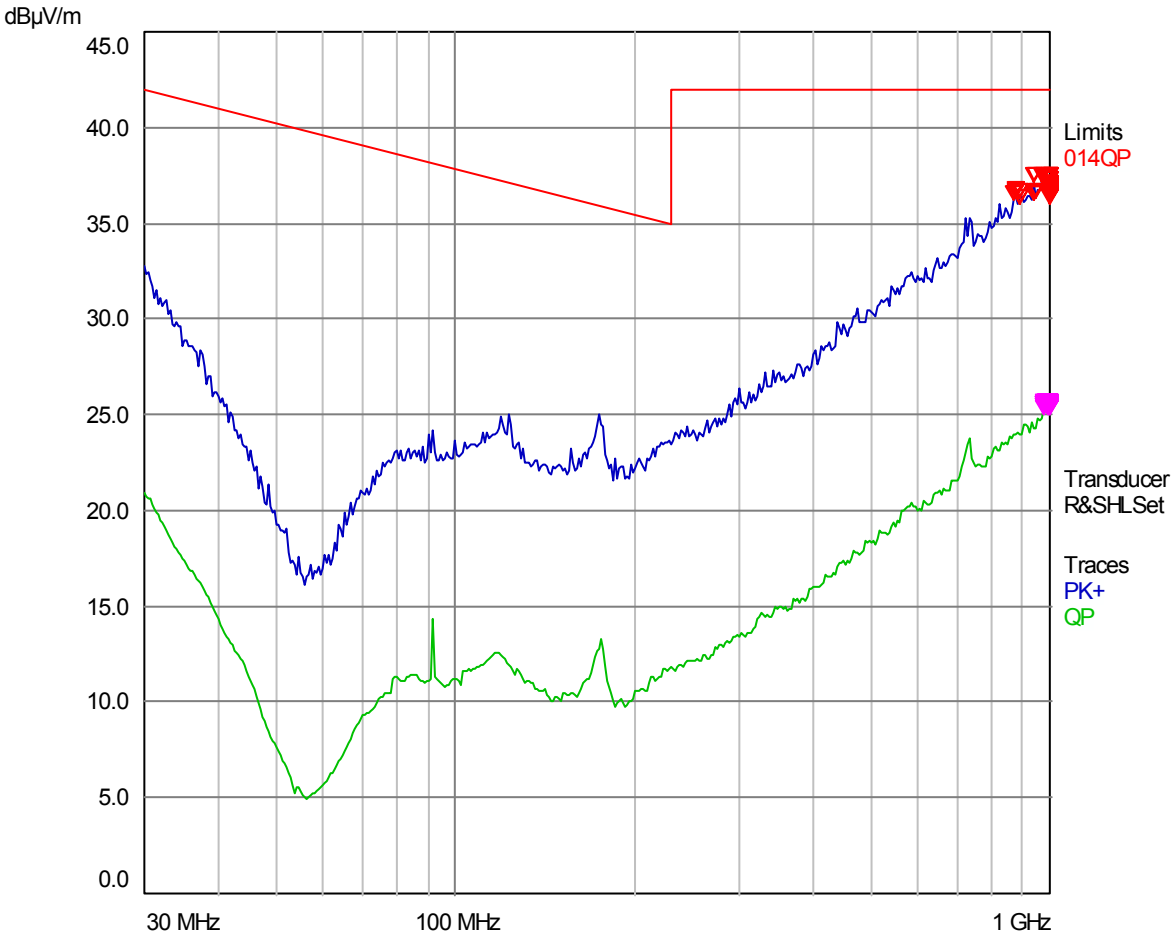
[1] Difference between radiated emission test values and reference limit is less than 2,3 db in frequency range 30MHz-230MHz and less than 1,4 db in frequency range 230MHz-1GHz. This value is equal to the difference between the uncertainty indicated by the standard EN 55016-4-2 and the uncertainty calculated value of radiated emission test. For more information see paragraph 11

Radiated emissions – Vertical polarization (30MHz-1000MHz)



Trace	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 QP	998.22	25.29	42.00	-16.71		
2 QP	977.88	25.28	42.00	-16.72		
2 QP	977.76	25.27	42.00	-16.73		
2 QP	978.39	25.27	42.00	-16.73		
2 QP	999.51	25.26	42.00	-16.74		
2 QP	977.7	25.25	42.00	-16.75		
2 QP	978.18	25.25	42.00	-16.75		
2 QP	978.03	25.24	42.00	-16.76		
2 QP	997.74	25.24	42.00	-16.76		
2 QP	999.84	25.24	42.00	-16.76		
2 QP	978.3	25.23	42.00	-16.77		
2 QP	978.51	25.21	42.00	-16.79		
2 QP	998.07	25.21	42.00	-16.79		
2 QP	999.09	25.18	42.00	-16.82		

Radiated emissions – Horizontal polarization (30MHz-1000MHz)



Trace	Frequency	Level	Limit	Delta Limit	Delta Ref	Comment
	(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(dB)	
2 QP	977.82	25.29	42.00	-16.71		
2 QP	999.06	25.28	42.00	-16.72		
2 QP	978.72	25.25	42.00	-16.75		
2 QP	999.45	25.25	42.00	-16.75		
2 QP	977.97	25.24	42.00	-16.76		
2 QP	997.65	25.23	42.00	-16.77		
2 QP	978.06	25.21	42.00	-16.79		
2 QP	997.56	25.21	42.00	-16.79		
2 QP	997.77	25.21	42.00	-16.79		
2 QP	998.67	25.20	42.00	-16.80		
2 QP	978.81	25.19	42.00	-16.81		
2 QP	999.78	25.19	42.00	-16.81		
2 QP	978.48	25.18	42.00	-16.82		
2 QP	997.95	25.18	42.00	-16.82		

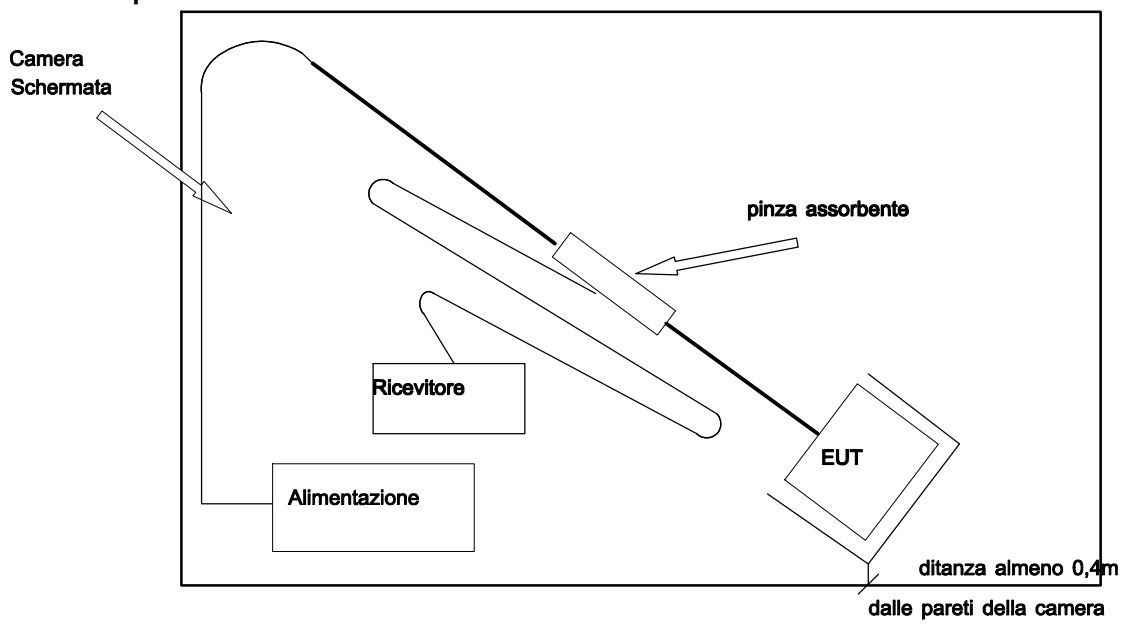
13.6 Radiated power *

Reference standard:	EN55014-1		
Port:	Enclosure		
EUT operative conditions:	See par. 9		
Instruments used:	**Frequency range**	**Instruments**	**Cables and accessories**
	30MHz – 300MHz	336; 151; 404	Cables 2, 24
Environmental conditions:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Length of sled:	6m		
Number of measure point on sled:	3		

Limits:

Frequency	Average value (dBpW)	Quasi-peak (dBpW)
30÷300 MHz	35-45	45-55

Test Set-up



Test results:

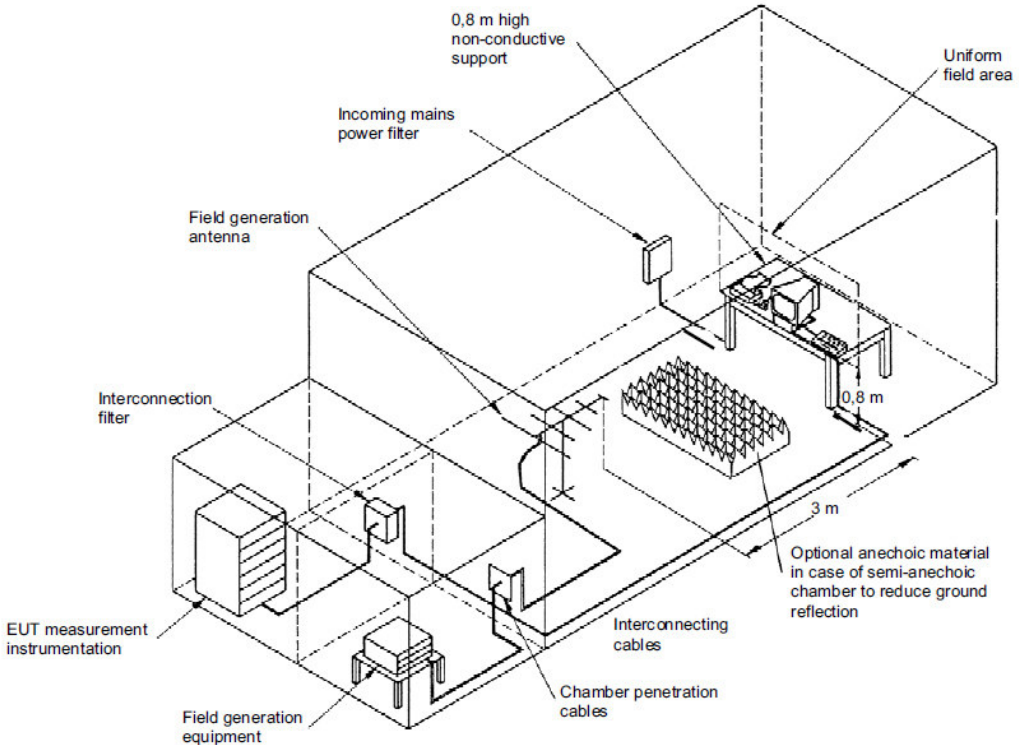
Frequency Range	Result
30MHz – 300MHz	☐ P ☐ P with Note[1] ☐F ☒NA ☐NE
[1] Note: Radiated power emission values are less than limits of Table 7 of EN 55014-1 minus values of Table 8 in frequency range 200-300MHz and maximum clock frequency of EUT is less than 30MHz. According to paragraph 4.3.4.2 of EN 55014-1 radiated emission in frequency range 300-1000MHz not be performed	

Frequency (MHz)	Max Quasi peak value (dbpW)	Max Average value (dbpW)
30		
45		
65		
90		
150		
180		
220		
300		

13.7 Immunity to em radiated fields

Reference standard:	EN 61000-4-3		
Port under test:	Enclosure		
EUT operative conditions:	See par. 9		
Instruments used:	**Frequency range**	**Instruments**	**Cables and accessories**
	80MHz – 1GHz	563; 473; 480; 155; 151; 350; 274; 492; 496	Cables 36, 23, 24
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Polarization:	Horizontal and vertical		
Sides:	4 sides		
Acceptance criteria:	A		

Test Set-up:



Test results:

Test level			Antenna	Result	Test effect on EUT
Field	**Mod.**	**Frequency**			
3V/m	AM 80% 1kHz	80MHz-1GHz	Vertical	☐ **P** ☐**F** ☐**NA** ☒**NE**	--
			Horizontal	☐ **P** ☐**F** ☐**NA** ☒**NE**	--

13.8 Immunity to electrostatic discharge

Reference standard:	EN 61000-4-2
Port under test:	Enclosure
EUT operative conditions:	See par. 9
Instruments used:	425; 413
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa
Polarity:	+ and -
Discharge type:	air, contact
Coupling:	Direct and indirect
Number of discharges:	10 for each point
Repetion time	1s
Acceptance criteria:	B

Coupling	Test level	Result	Test effect on EUT
Direct Contact discharge	+/-4 kV	☐ P ☐ F ☐ NA ☒ NE	--
Direct Air discharge	+/-8kV	☐ P ☐ F ☐ NA ☒ NE	--
Indirect Horizontal plane	+/-4 kV	☐ P ☐ F ☐ NA ☒ NE	--
Indirect Vertical plane	+/-4 kV	☐ P ☐ F ☐ NA ☒ NE	--

13.9 Immunity to current inducted by RF fields

Reference standard:	EN 61000-4-6		
Port under test:	AC Power supply		
EUT operative conditions:	See par. 9		
Instruments used:	**Port**	**Instruments**	**Cables and accessories**
	Power supply	424; 73; 74; 413	Cables 6; 10
	Signal	424; 73; 487; 413	Cables 6; 10
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Coupling:	CDN M2/M3 for power supply injection clamp for signals		
Acceptance criteria:	A		

Test results:

Port	**Test level**			**Result**	**Test effect on EUT**
	Voltage	**Modulation**	**Frequency**		
AC Power supply	3V	AM 80% 1kHz	150kHz-80MHz	☐ **P** ☐ **F** ☐ **NA** ☒ **NE**	--
DC Power supply	1V	AM 80% 1kHz	150kHz-80MHz	☐ **P** ☐ **F** ☐ **NA** ☒ **NE**	--
Signal	1V	AM 80% 1kHz	150kHz-80MHz	☐ **P** ☐ **F** ☐ **NA** ☒ **NE**	--

13.10 Immunity to bursts-fast transients

Reference standard:	EN 61000-4-4		
Port under test:	AC Power supply		
EUT operative conditions:	See par. 9		
Instruments used:	**Port**	**Instruments**	**Cables and accessories**
	Power supply	335; 413	--
	Signal	335; 413; 21b	Cables Clamp
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Coupling:	cdn inside test instrument capacitive clamp for signal port		
Test duration:	2 min for each polarity on all lines at same time		
Acceptance criteria:	B		

Test results:

Port	Test level	Result	Test effect on EUT
AC Power supply	+/-1kV / 5kHz	☐ **P** ☐**F** ☐**NA** ☒**NE**	--
DC Power supply	+/ 0,5kV / 5kHz	☐ **P** ☐**F** ☐**NA** ☒**NE**	--
Signal	+/-0,5Kv / 5kHz	☐ **P** ☐**F** ☐**NA** ☒**NE**	--

13.11 Immunity to surge

Reference standard:	EN 61000-4-5		
Port under test:	AC Power supply		
EUT operative conditions:	See par. 9		
Instruments used:	**Port**	**Instruments**	**Cables and accessories**
	Power supply	335; 413	--
	Signal	335; 413; 457	--
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa		
Coupling:	cdn inside test instrument		
Number of pulses:	5 for each polarity		
Time between pulses:	30 sec		
Angle:	90°+; 270°-		
Acceptance criteria:	B		

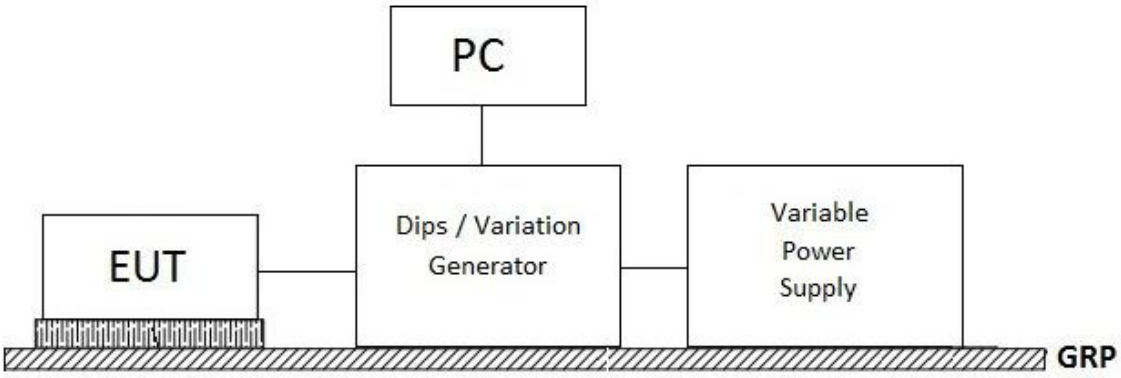
Test results:

Port	Test level		Result	Test effect on EUT
AC Power supply	Common mode	+/-2kV	☐ **P** ☐**F** ☐**NA** ☒**NE**	--
	Differential mode	+/-1kV	☐ **P** ☐**F** ☐**NA** ☒**NE**	--

13.12 Immunity to dips and voltage variations

Reference standard:	EN 61000-4-11
Port under test:	AC Power supply
EUT operative conditions:	See par. 9
Instruments used:	335; 510; 515; 439; 552; 562; 571; 572
Environmental condition:	Temperature: 20÷28°C Humidity: 30÷60% Atmospheric pressure: 860÷1060hPa
Coupling:	Direct from power source
Number of repetions:	3 for each dip
Time between dips:	10s
Angle:	0°
Acceptance criteria:	C

Test Set-up:



Test results:

Vn = 400Vac

Test level	Result	Test effect on EUT
0%Vn -10ms	☐ P ☐ F ☐ NA ☒ NE	--
40%Vn - 200ms	☐ P ☐ F ☐ NA ☒ NE	--
70%Vn - 500ms	☐ P ☐ F ☐ NA ☒ NE	--

Vn = 110Vac

Test level	Result	Test effect on EUT
0%Vn -10ms	☐ P ☐ F ☒ NA ☐ NE	--
40%Vn - 200ms	☐ P ☐ F ☒ NA ☐ NE	--
70%Vn - 500ms	☐ P ☐ F ☒ NA ☐ NE	--

*** END OF TEST REPORT ***