



Report No.: GZ10010583-1R26
Issued: 2017-05-19

TEST REPORT

Applicant Name & Address : Guangdong Midea Kitchen Appliances Manufacturing Co., Ltd.
No.6, Yong An Road, Beijiao, Shunde, Foshan, P.R. China
Manufacturing Site : Same as above
Sample Description :
Product : Microwave oven with or without grill
Model No. : Refer to page 5-6
Electrical Rating : Refer to page 7

Date Received : 13 Apr., 2017

Date Test Conducted : 13 Apr., 2017 to 27 Apr., 2017

Test standards : **EN 55011: 2009+A1: 2010**
EN 55014-1: 2006+A1:2009+A2: 2011
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 55014-2: 1997+A1: 2001+A2: 2008

Test Result : Pass

Conclusion : The submitted samples complied with the above EMC standards.


Remark : RF No.: EN55011 2009+A1 2010 (MWO+Grill)-a
Effective date: 19 April 2015

*****End of Page*****

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19 May 2017 *Date*

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TEST RESULTS SUMMARY

Classification of EUT: Group 2, Class B – Pursuant to EN55011
Category II – Pursuant to EN55014-2

Test Item	Standard	Result
Continuous conducted disturbance voltage	EN 55011: 2009+A1:2010 EN 55014-1: 2006+A1:2009+A2: 2011	Pass
Discontinuous conducted disturbance voltage	EN 55014-1: 2006+A1:2009+A2: 2011	Pass
Radiated disturbance power	EN 55014-1: 2006+A1:2009+A2: 2011	Pass
Radiated disturbance	EN 55014-1: 2006+A1:2009+A2: 2011 Reference: CISPR 16-2-3; 2006	N/A
Radiated emission (0.009-30MHz)	EN 55011: 2009+A1:2010	N/A
Radiated emission (0.15-30MHz)	EN 55011: 2009+A1:2010	Pass
Radiated emission (30-1000MHz)	EN 55011: 2009+A1:2010	Pass
Radiated emission (1-18GHz)	EN 55011: 2009+A1:2010	Pass
Harmonic of current	EN 61000-3-2: 2014	Pass
Flicker	EN 61000-3-3: 2013	Pass
ESD immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-2:1995+A1: 1998+A2: 2001	Pass
Radiated EM field immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-3:2006+A1:2008	N/A
EFT immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-4: 2004	Pass
Surge immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-5:2006	Pass
Inject current immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-6:2007	Pass
Voltage dips and interruption immunity	EN 55014-2: 1997+A1: 2001+A2: 2008 Reference: EN 61000-4-11:2004	Pass

Remark: 1. The symbol “N/A” in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.

2

EMC Results Conclusion
(with Justification)

RE: EMC Testing Pursuant to EMC Directive 2014/30/EU Performed On the Microwave oven with or without grill, Models: AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM, EM720C*-PM, EG720C*-PM, EM720C*(F)-PM, EG720C*(F)-PM, EM717C*-PM, EG717C*-PM, EM717C*(F)-PM, EG717C*(F)-PM, MM720C*-PM, MG720C*-PM, MM720C*(F)-PM, MG720C*(F)-PM, MM717C*-PM, MG717C*-PM, MM717C*(F)-PM, MG717C*(F)-PM, EM720C*-PMB, EG720C*-PMB, EM720C*(F)-PMB, EG720C*(F)-PMB, MM720C*-PM2E, MG720C*-PM2E, MM720C*(F)-PM2E, MG720C*(F)-PM2E, MM720C*-PMUE, MM717C*-PMUE, AM720CPK-PM0E, AG720CPK-PM0E, AM720CPK-PM0F, AG720CPK-PM0F.

Portable microwave oven with or without grill function is only for household use.

Detail for models:

AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM
(* = KA, KC, KD, KE, KL, LW, TM, DB, QL, QO, QM, TL, QP, RL, RM, RN, RO, ZL, ZM, ZW, ZS, FA, FB, PK, QW, RK, QR, MA, PY, WW, TB, PW, PN, PQ, PJ, PA, PB, PE, PU, MB, UG, ON, XP, MF, PO, PR, PT, PZ, PV, QZ, MK, PP, XW, TE, TV, XC, XT, XB, UK, XD, XZ, GO, BU, 3D, GE, 4D, 4E, 5W, T5, K7, SZ, L7, Y6, D6, B1, Y7, P2, E6, QI, 2QI, GN);

EM720C*-PM, EG720C*-PM, EM720C*(F)-PM, EG720C*(F)-PM, EM717C*-PM, EG717C*-PM, EM717C*(F)-PM, EG717C*(F)-PM
(* = KC, KE, KL, QL, QO, TL, QP, RL, QM, RN, RO, TM, RM, ZL, AP, ZS, NF, PL, QM, WW, FD, TB, PN, IP, XM, PT, PO, PY, UG, PZ, FB, WL, XN, QR, CC, EL, AA, PI, EE, XU, YU, FF, QN, FO, R1, NN);

MM720C*-PM, MG720C*-PM, MM720C*(F)-PM, MG720C*(F)-PM, MM717C*-PM, MG717C*-PM, MM717C*(F)-PM, MG717C*(F)-PM
(* = KA, KC, KD, KE, KL, LW, QL, TM, QO, QM, RO, TL, QP, RL, RN, RM, ZL, AP, FA, ZW, ZS, ZM, FB, DW, RK, PZ, MA, PY, WW, PP, PI, QN, NF, PE, MB, TB, PA, PW, PN, PQ, PJ, PB, PK, XM, XP, MF, PU, PS, QW, OR, UK, PV, XK, TE, CC, XN, XT, AA, BC, XU, YU, XX, 4H, GE, 5W, RU, 4E, T5, QN, J9, MF, J5, A7, R6, BU, L7, D8, Y6, D6, PV, P2, E6, GN, PI)

EM720C*-PMB, EG720C*-PMB, EM720C*(F)-PMB, EG720C*(F)-PMB (* = XN)

MM720C*-PM2E, MG720C*-PM2E, MM720C*(F)-PM2E, MG720C*(F)-PM2E (* = MA)

MM720C*-PMUE, MM717C*-PMUE

(* = KA, KC, KD, KE, KL, LW, QL, TM, QO, QM, RO, TL, QP, RL, RN, RM, ZL, AP, FA, ZW, ZS, ZM,

FB, DW, RK, PZ, MA, PY, WW, PP, PI, QN, NF, PE, MB, TB, PA, PW, PN, PQ, PJ, PB, PK, XM, XP, MF, PU, PS, QW, OR, UK, PV, XK, TE, CC, XN, XT, AA, BC, XU, YU, XX, 4H, GE, 5W, RU, 4E, T5, QN, J9, MF, J5, A7, R6, BU, L7, D8, Y6, D6, PV, P2, E6)

AM720CPK-PM0E, AG720CPK-PM0E and AM720CPK-PM0F, AG720CPK-PM0F

All the models have same construction except following differences:

1. The first letter “A” in model name express that the control panel is electronic button type,
2. The first letter “E” in model name express that the control panel is electronic membrane type.
3. The first letter “M” in model name express that the control panel is mechanical control.
4. The second letter “M” in model name express that the appliances only have microwave function.
5. The second letter “G” in model name express that the appliances have both microwave and grill function.
6. The * express the appearance of the door. (The * describe nothing for user), Refer to photo document for detail.
7. The suffix letter “(F)” express rating input voltage difference. With the suffix means rating input voltage is 230-240V, without the suffix means rating input voltage 230V.
8. Model AM717C*-PM is identical with model AM720C*-PM except model name. The same difference between all 717 series models and 720 series models.
9. Model EM720C*-PMB, EG720C*-PMB, EM720C*(F)-PMB, EG720C*(F)-PMB is identical with model EM720C*-PM, EG720C*-PM, EM720C*(F)-PM, EG720C*(F)-PM except enclosure color, EM720C*-PMB, EG720C*-PMB, EM720C*(F)-PMB, EG720C*(F)-PMB is black, but EM720C*-PM, EG720C*-PM, EM720C*(F)-PM, EG720C*(F)-PM is white.
10. Models with suffix PM2E is similar with models with suffix PM except for control panel and knob shape.
11. Models MM720C*-PMUE, MM717C*-PMUE are identical to original models MM720C*-PM, MM717C*-PM except installation. MM720C*-PM, MM717C*-PM are portable appliance, and MM720C*-PMUE, MM717C*-PMUE are fixed appliance, its top surface will be fixed. Also a rubber blanket was added to the bottom of H.V. transformer for MM720C*-PMUE, MM717C*-PMUE to thermal insulation.
12. Models AM720CPK-PM0E, AG720CPK-PM0E and AM720CPK-PM0F, AG720CPK-PM0F are identical to models AM720CPK-PM, AG720CPK-PM and AM720CPK(F)-PM, AG720CPK(F)-PM accordingly except door handle.

For models, which rated input voltage is 230V, only fulfil for the area where use rated voltage 230V in UNITED KINGDOM.

Rating:

For models AM720C*-PM, AG720C*-PM, AM717C*-PM, AG717C*-PM, EM720C*-PM, EG720C*-PM, EM717C*-PM, EG717C*-PM, MM720C*-PM, MG720C*-PM, MM717C*-PM, MG717C*-PM, EM720C*-PMB, EG720C*-PMB, MM720C*-PM2E, MG720C*-PM2E, MM720C*-PMUE, MM717C*-PMUE, AM720CPK-PM0E, AG720CPK-PM0E:

230 V~, 50 Hz, Class I, Microwave frequency: 2450 MHz, Input power for microwave: 1050 W; Grill: 1000W (only for models with grill function)

For models AM720C*(F)-PM, AG720C*(F)-PM, AM717C*(F)-PM, AG717C*(F)-PM, EM720C*(F)-PM, EG720C*(F)-PM, EM717C*(F)-PM, EG717C*(F)-PM, MM720C*(F)-PM, MG720C*(F)-PM, MM717C*(F)-PM, MG717C*(F)-PM, EM720C*(F)-PMB, EG720C*(F)-PMB, MM720C*(F)-PM2E, MG720C*(F)-PM2E, AM720CPK-PM0F, AG720CPK-PM0F:
230-240 V~, 50 Hz, Class I, Microwave frequency: 2450 MHz, Input power for microwave: 1100-1150 W; Grill: 950-1000W (only for models with grill function)

Report revision reason:

This report is the revision of the previous test report GZ10010583-1R125 dated on 29 Mar., 2017 and shall be used together with it.

The report was issued because of below change:

1. Added alternative waveguide cover, which is plastic. Details see photo details.
2. Added new models AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM (*= GN), which are identical to previous models except appearance of the door and control panel.

Base on above, model AG720C*(F)-PM was selected for Continuous conducted disturbance voltage, Radiated emission (0.15-30MHz), Radiated emission (30-1000MHz) and Radiated emission (1-18GHz) test.

The production units are required to conform to the initial sample as received when the units are placed on the market.

3

LABORATORY MEASUREMENTS

Configuration Information

Equipment Under Test (EUT):	Microwave oven with or without grill
Model:	AG720C*(F)-PM
Serial No.	N/A (Not Labeled)
Support Equipment:	N/A
Rated Voltage:	220-240V~ 50/60Hz
Condition of Environment:	Temperature : 22~28°C Relative Humidity: 35~60% Atmosphere Pressure 86~106kPa

Notes:

1. The EMI measurements had been made in the operating mode produced the largest emission in the frequency band being investigated consistent with normal applications. An attempt had been made to maximize the emission by varying the configuration of the EUT.

2. The EMS measurements had been made in the frequency bands being investigated, with the EUT in the most susceptible operating mode consistent with normal applications. The configuration of the test sample had been varied to achieve maximum susceptibility.

3. Test Sites:

GD WITOL Vacuum Electronic Manufacture Co., Ltd.
Xingye East Road, Beijiao Industry City, Shunde District, Foshan, Guangdong PRC

4 EMI TEST

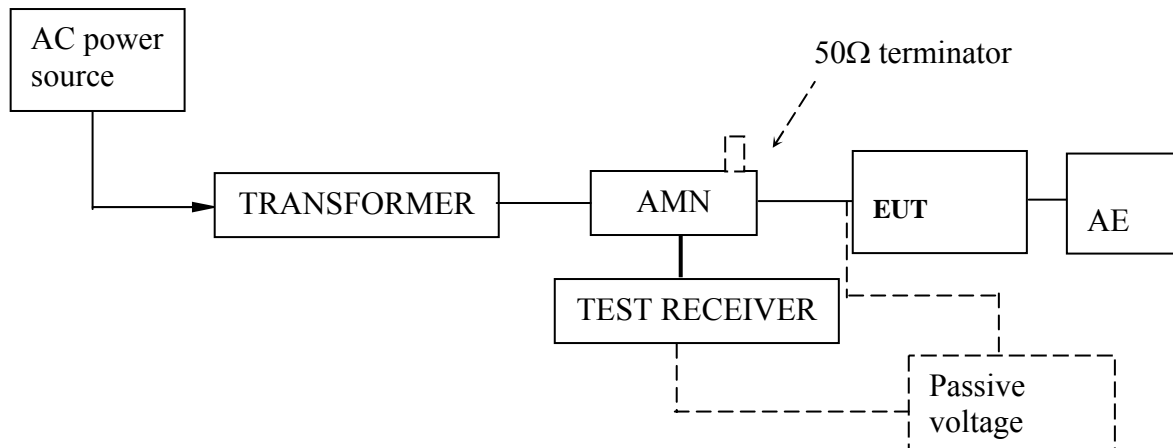
4.1 EN 55011/EN 55014-1 Continuous Conducted Disturbance Voltage Test

Test Result: Pass

4.1.1 Used Test Equipment

NO.	Equipment	Manufacturer	Model No.
EMC017	EMI Test Receiver	Rohde & Schwarz	ESCS30
EMC021	LISN	Schaffner	NNB42
EMC022	Pulse limiter	Rohde & Schwarz	ESH3-Z2
EMC045	Shielded room	ETS	10*4*3m

4.1.2 Block Diagram of Test Setup



4.1.3 Test Setup and Procedure

The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provide a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.4m high non-metallic table above earthed ground plane(Ground Reference Plane).And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9kHz. The frequency range from 150kHz to 30MHz was checked.

4.1.4 Test Data

At main terminal: Pass

EN 55011

Tested Wire: Live

Operation Mode: 100% Micro Power

Frequency [MHz]	Quasi-Peak		Average	
	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]
0.353	47.0	58.9	18.5	48.9
1.000	<45	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

Tested Wire: Neutral

Operation Mode: 100% Micro Power

Frequency [MHz]	Quasi-Peak		Average	
	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]
0.258	48.3	61.5	<39	51.5
1.000	<46	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

EN 55014-1

Tested Wire: Live

Operation Mode: Grill

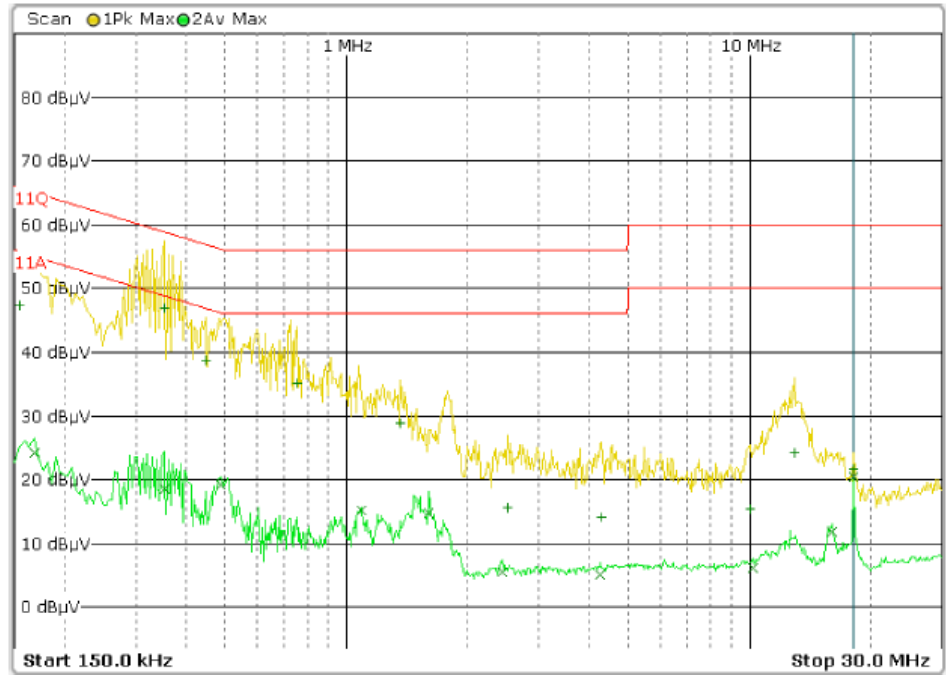
Frequency [MHz]	Quasi-Peak		Average	
	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]
0.150	<56	66.0	<49	59.0
0.294	<50	60.4	<43	53.4
0.550	<46	56.0	<36	46.0
1.000	<46	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

Tested Wire: Neutral

Operation Mode: grill

Frequency [MHz]	Quasi-Peak		Average	
	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]	Disturbance level [dB(μV)]	Permitted limit [dB(μV)]
0.150	<56	66.0	<49	59.0
0.294	<50	60.4	<43	53.4
0.550	<46	56.0	<36	46.0
1.000	<46	56.0	<36	46.0
1.400	<46	56.0	<36	46.0
2.000	<46	56.0	<36	46.0
3.500	<46	56.0	<36	46.0
6.000	<50	60.0	<40	50.0
10.000	<50	60.0	<40	50.0
22.000	<50	60.0	<40	50.0
30.000	<50	60.0	<40	50.0

4.1.5 Emission Curve
At mains terminal:
EN 55011
Tested Wire: Live

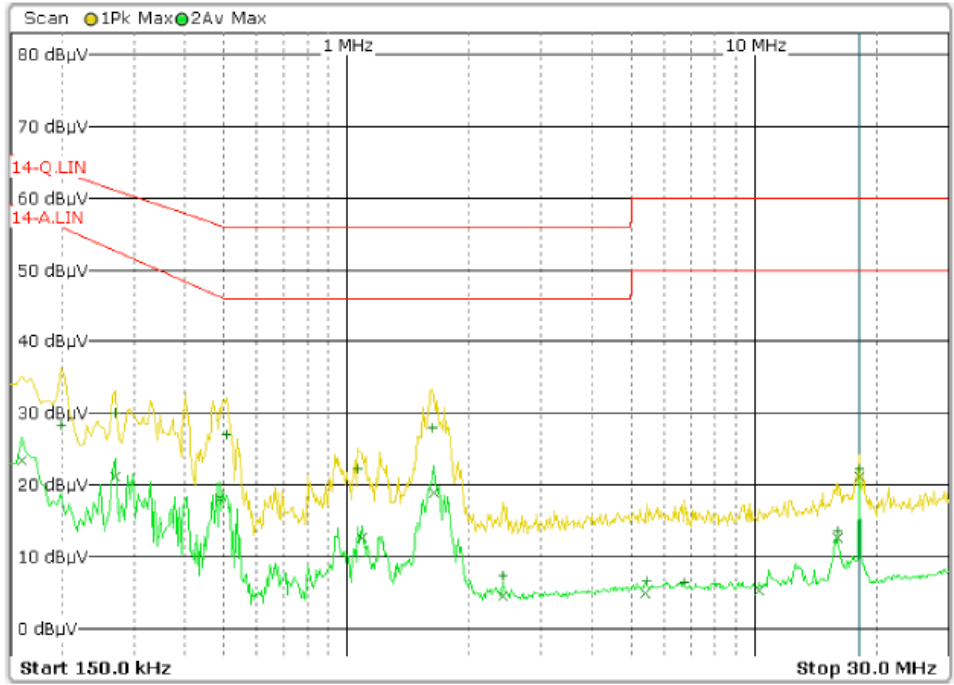


Tested Wire: Neutral

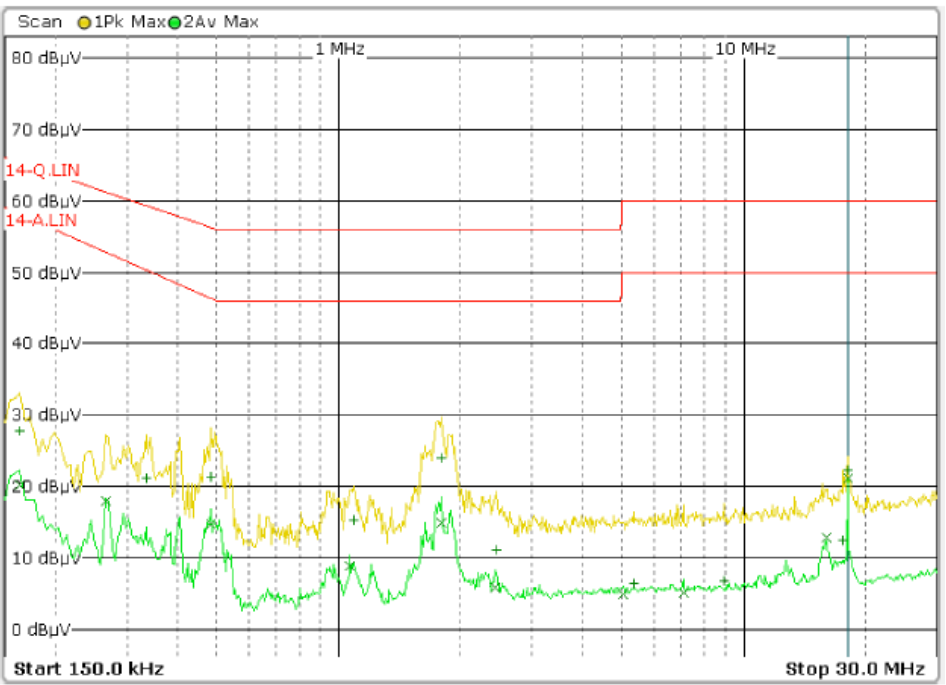


EN 55014-1

Tested Wire: Live



Tested Wire: Neutral



4.1.6 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with CISPR 16-4-2:2003.

Measurement uncertainty of mains terminal disturbance voltage in CISPR band A: 3.0 dB.

Measurement uncertainty of mains terminal disturbance voltage in CISPR band B: 3.0 dB.

The measurement uncertainty is given with a confidence of 95%, $k=2$.

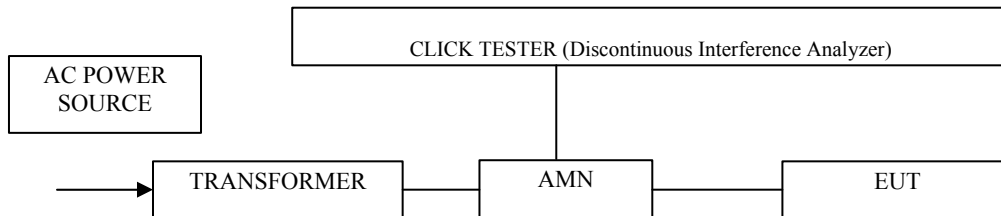
4.2 EN 55014-1 Discontinuous Conducted Disturbance Voltage

Test Result: Pass

4.2.1 Used Test Equipment

NO.	Equipment	Manufacturer	Model No.
EMC023	Click analyser	Schaffner	D1A1512D
EMC049	LISN	Rohde & Schwarz	ESH2-Z5
EMC045	Shielded room	ETS	10*4*3m

4.2.2 Block Diagram of Test Setup



4.2.3 Test Setup and Procedure

The EUT was placed on a 0.8m high non-metallic table in shielded room, the wall of shielded room used as Ground Reference Plane (GRP), and keeps a distance of at least 0.8m from any of the other metallic surface.

The EUT was connected to an artificial mains network and at a distance of 0.8m from it, the excess lead of EUT was bundled with a length of 0.3m to 0.4m parallel to the main lead.

The number of counted clicks above the permitted limit for continuous interference and their duration, spacing and rate were measured during the observation time. When relevant, a permitted (relaxed) limit for clicks were calculated and a second measurement was performed. Determination of compliance with the permitted limit according to the upper quartile method was applied. The frequency 150kHz, 500kHz, 1.4MHz and 30MHz was checked.

4.2.4 Test Data

Frequency (MHz)	0.15	0.50	1.40	30.00
Permitted limit for continuous interference (dB μ V)	66	56	56	60
Short Clicks [T<10ms]	17	0	2	0
Mid. Clicks [10ms<T<20ms]	0	0	0	0
Long Clicks [T>20ms]	0	0	0	0
Total clicks (number)/ Switching operation (number)	17	0	2	0
Observation time (min.)	120			
Factor	--			
Click rate, N	0.14	0.00	0.00	0.00
Value to be added (dB)	--	--	--	--
Permitted limit for clicks (dB μ V)	--	--	--	--
Counted clicks exceeding the limit (number)	--	--	--	--
Counted clicks allowed to exceed the permitted limit (number)	--	--	--	--
Complies with the limit	YES	YES	YES	YES

The appliance was deemed to comply with the limits if fulfilling the three conditions below:

- the click rate is not more than 5.
- none of the caused clicks has a duration longer than 20 ms.
- 90 % of the caused clicks have a duration less than 10 ms.

4.2.5 Measurement Uncertainty

The measurement uncertainty for click test is under consideration according to CISPR 16-4-2:2003.

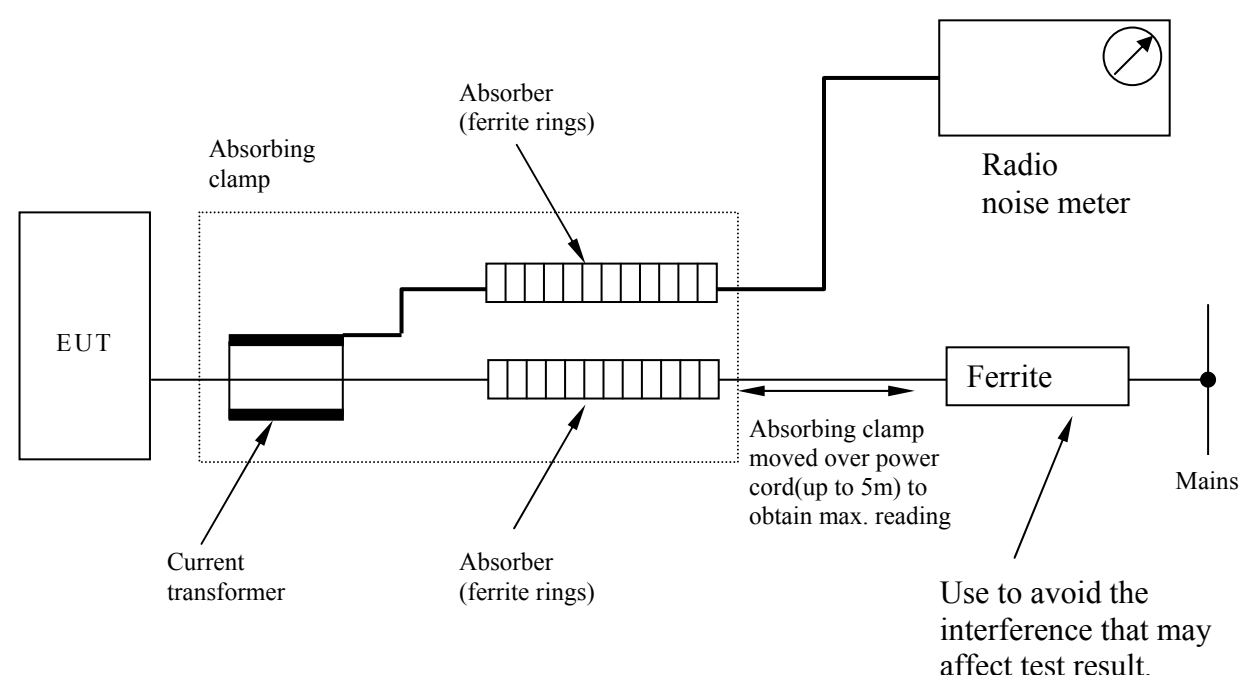
4.3 EN 55014-1 Radiated Disturbance Power

Test Result: Pass

4.3.1 Used Test Equipment

NO.	Equipment	Manufacturer	Model No.
EMC047	EMI Test Receiver	Rohde & Schwarz	ESR
EMC019	Absorbing Clamp	Schaffner	AMZ41
EMC045	Shielded room	ETS	10*4*3m

4.3.2 Block Diagram of Test Setup



4.3.3 Test Setup and Procedure

The disturbance power was measured with the EUT in a shielded room. The height of the table shall be $0,1 \text{ m} \pm 0,025 \text{ m}$ for appliances primarily intended to be positioned on the floor in normal use, and $0,8 \text{ m} \pm 0,05 \text{ m}$ for other appliances. The EUT was placed on a non-metallic table at least 0.8m from other metallic surface and the mains lead of EUT was extended to about 6m long. The auxiliary lead longer than 0.25m but shorter than twice length of absorbing clamp was extend to twice length of clamp and those longer than twice length was extend to 6 meters.

The absorbing clamp was moved along the lead to obtain maximum disturbance. The EUT was set to achieve the maximum emission level, and for each point which appears a relevant high emission level, the absorbing clamp was moved around the lead to get the maximum disturbance value.

The bandwidth of test receiver was set at 120 kHz. The frequency range from 30MHz to 300MHz was checked.

When measurements of disturbance are being made, the appliance shall be operated under the conditions defined in clause 7.

4.3.4 Test Data

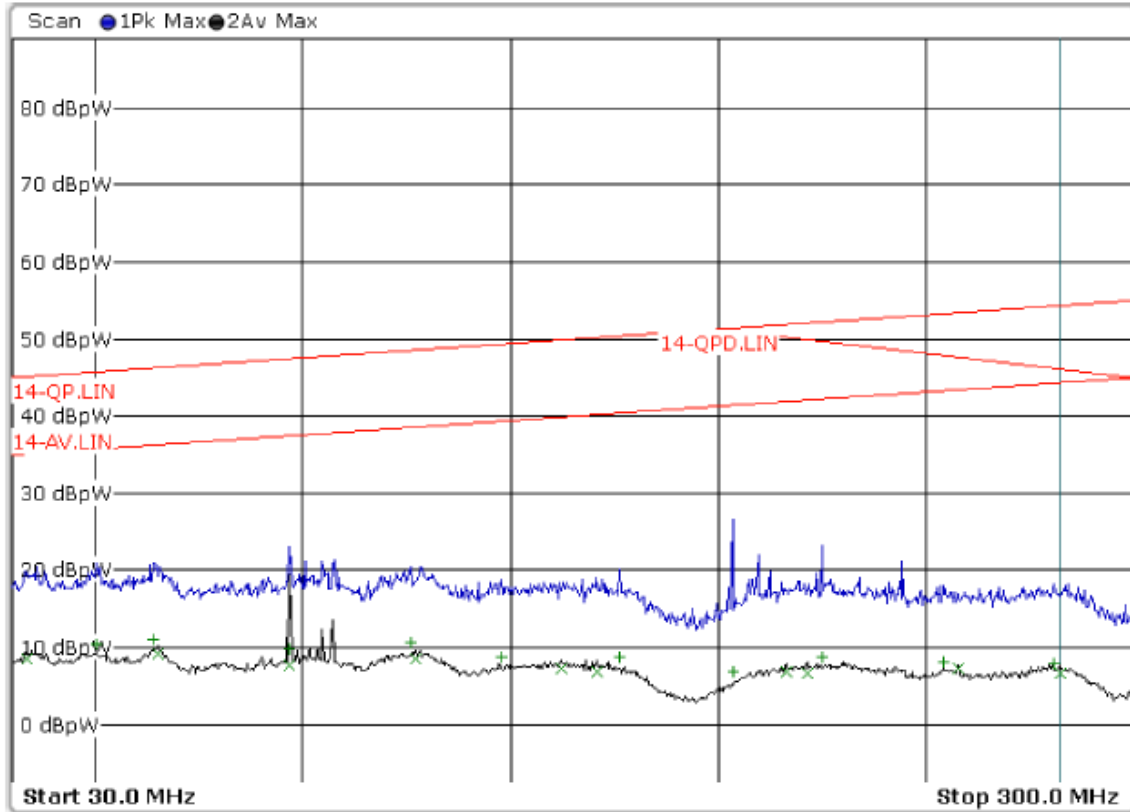
Tested Port: mains

Operation mode: Grill

Frequency [MHz]	Quasi-Peak		Average	
	Disturbance level [dB(pW)]	Permitted limit [dB(pW)]	Disturbance level [dB(pW)]	Permitted limit [dB(pW)]
30.000	<35	45.0	<25	35.0
33.400	<35	45.1	<25	35.1
35.500	<35	45.2	<25	35.2
36.500	<35	45.2	<25	35.2
39.500	<35	45.4	<25	35.4
45.000	<35	45.6	<25	35.6
48.000	<35	45.7	<25	35.7
65.000	<36	46.3	<26	36.3
72.000	<36	46.6	<26	36.6
83.000	<37	47.0	<27	37.0
90.000	<37	47.2	<27	37.2
150.000	<39	49.4	<29	39.4
180.000	<40	50.6	<30	40.6
220.000	<42	52.0	<32	42.0
300.000	<45	55.0	<35	45.0

The measurement quasi-peak data of disturbance power is lower than applicable limit reduced by the margin (0 to 10dB) at frequency range 200 to 300 MHz and the maximum clock frequency is less than 30MHz

4.3.5 Test Curve



4.3.6 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with CISPR 16-4-2: 2003.

Measurement uncertainty of mains terminal disturbance power: 3.13 dB

The measurement uncertainty is given with a confidence of 95%, k=2.

4.4 EN 55014-1 Radiated Disturbance

Test Result: Not Applicable

Remark:

Radiated disturbance shall not be conducted, if the measurement quasi-peak data of disturbance power is lower than applicable limit reduced by the margin (0 to 10dB) at frequency range 200 to 300 MHz and the maximum clock frequency is less than 30MHz,.

Radiated disturbance (300-1000MHz) shall be conducted, if the measurement quasi-peak data of disturbance power is between the limit and limit reduced by the margin (0 to 10dB) at frequency range 200 to 300 MHz or the maximum clock frequency is not less than 30MHz,.

Radiated disturbance(30-1000MHz) is applied to battery-operated appliance

4.5 EN 55011 Radiated Emission (Magnetic Field, 0.009-30MHz)

Test Result: N/A

Remark:

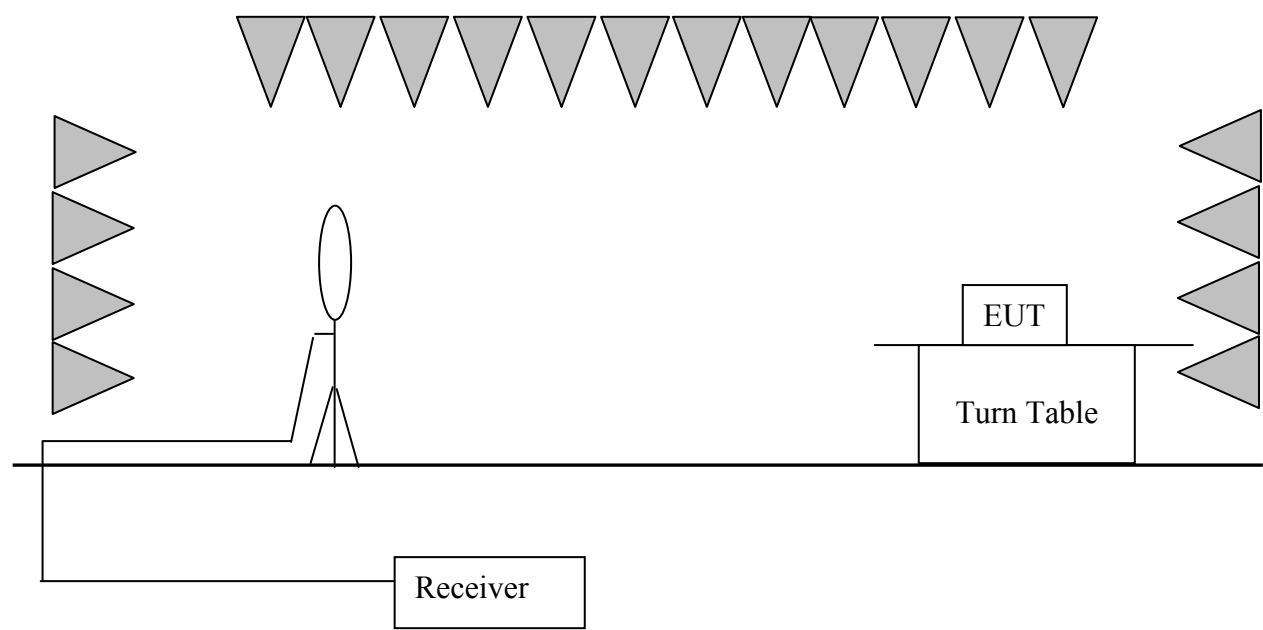
This test is applicable for induction cooker.

4.6 EN 55011 Radiated Emission (Magnetic Field, 0.15-30MHz)
Test Result: PASS

4.6.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EMC051	EMI test receiver	ESIB-26	R&S
EMC052	Spectrum Analyzer	FSP30	R&S
EMC055	Loop Antenna	ETS-6152	ETS
EMC056	Preamp	JCA218-309	JCA
EMC057	Anechoic Chamber	9m×6m×5.7m	TDK

4.6.2 Block Diagram of Test Setup



4.6.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber. The EUT were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tripod.

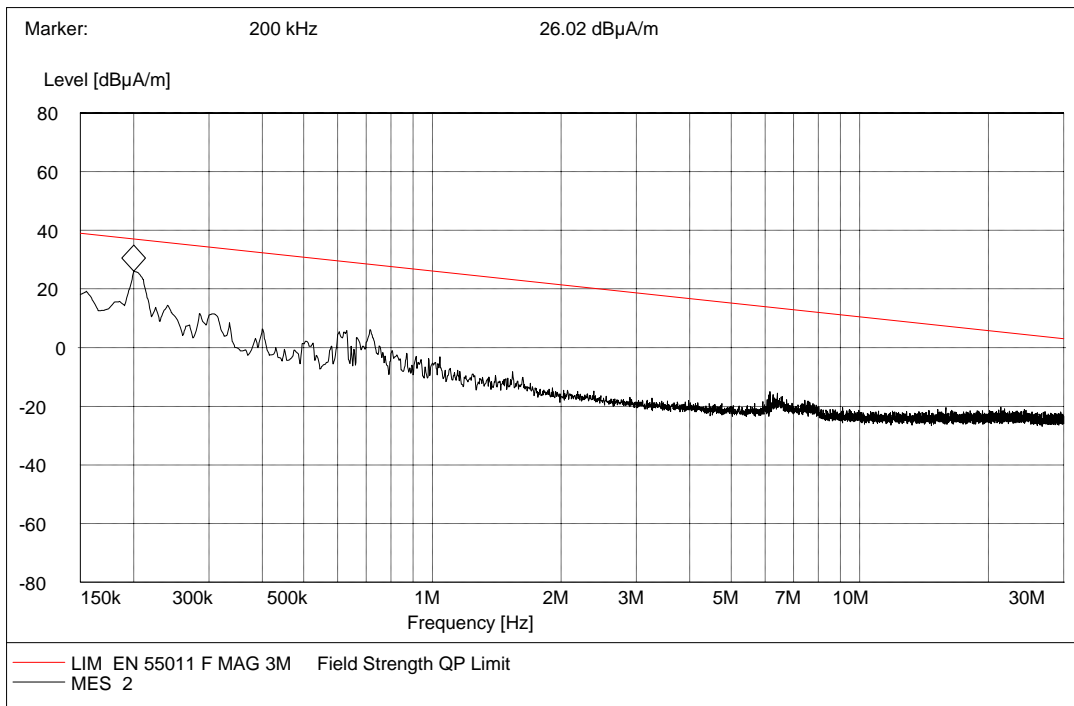
Loop antenna was used as receiving antenna. The antenna was supported in the vertical plane and was rotatable about a vertical axis to obtain the maximum emission. The lowest point of the loop was 1 m above ground level.

The bandwidth setting on Receiver was 9 kHz. The frequency range from 0.150MHz to 30MHz was checked

4.6.4 Test Data

Frequency [MHz]	Quasi-Peak	
	Disturbance level [dB (μA/m)]	Permitted limit [dB (μA/m)]
0.200	25.4	38.9
0.250	23.1	38.9
0.280	21.7	38.8
0.335	19.6	38.8
0.455	17.8	38.6

4.6.5 Test Curve



4.6.6 Measurement uncertainty

The measurement uncertainty for magnetic field radiated emission test is under consideration according to CISPR 16-4-2:2003.

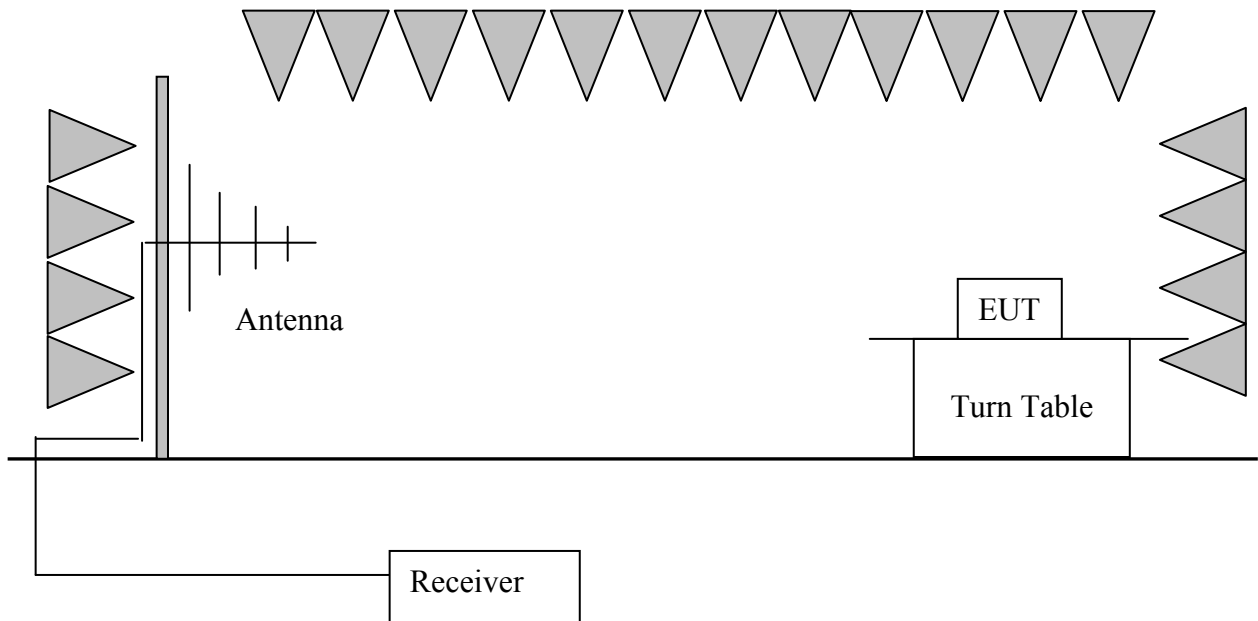
4.7 EN 55011 Radiated Emission (Electric Field, 30-1000MHz)

Test Result: Pass

4.7.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EMC051	EMI test receiver	ESIB-26	R&S
EMC052	Spectrum Analyzer	FSP30	R&S
EMC056	Preamp	JCA218-309	JCA
EMC057	Anechoic Chamber	9m×6m×5.7m	TDK
EMC054	Hybrid Log Periodic Antenna	HLP-3003C	TDK

4.7.2 Block Diagram of Test Setup



4.7.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber. The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mask. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Broadband antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement.

The bandwidth setting on R&S Test Receiver was 120 kHz.

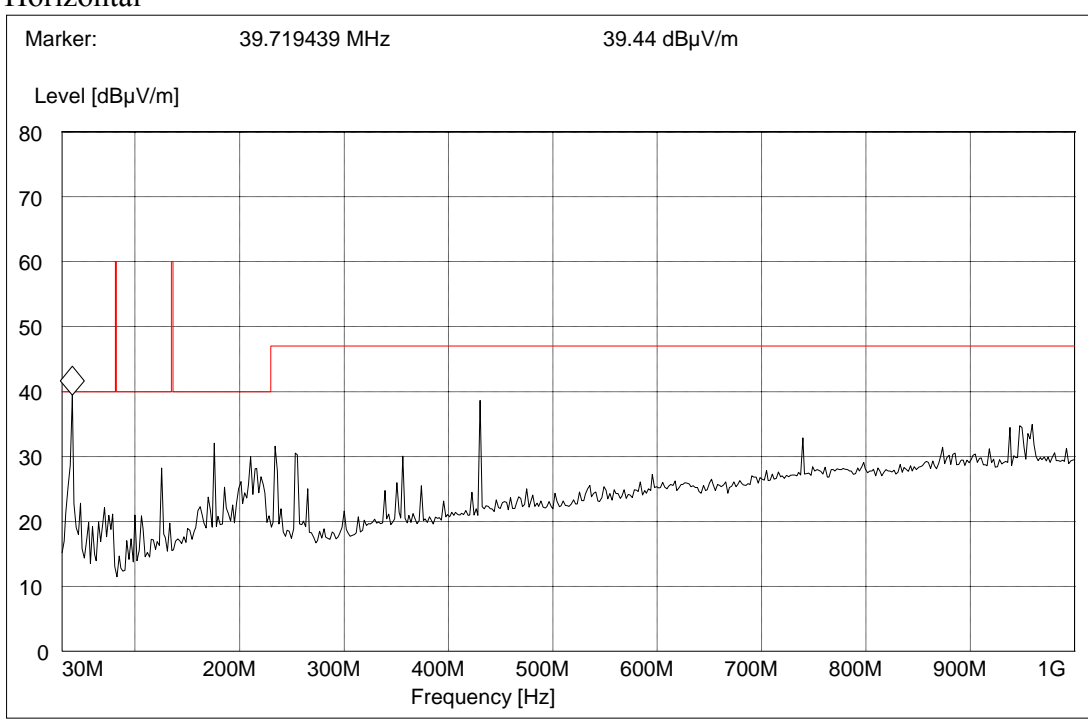
The frequency range from 30 MHz to 1000 MHz was checked

4.7.4 Test Data

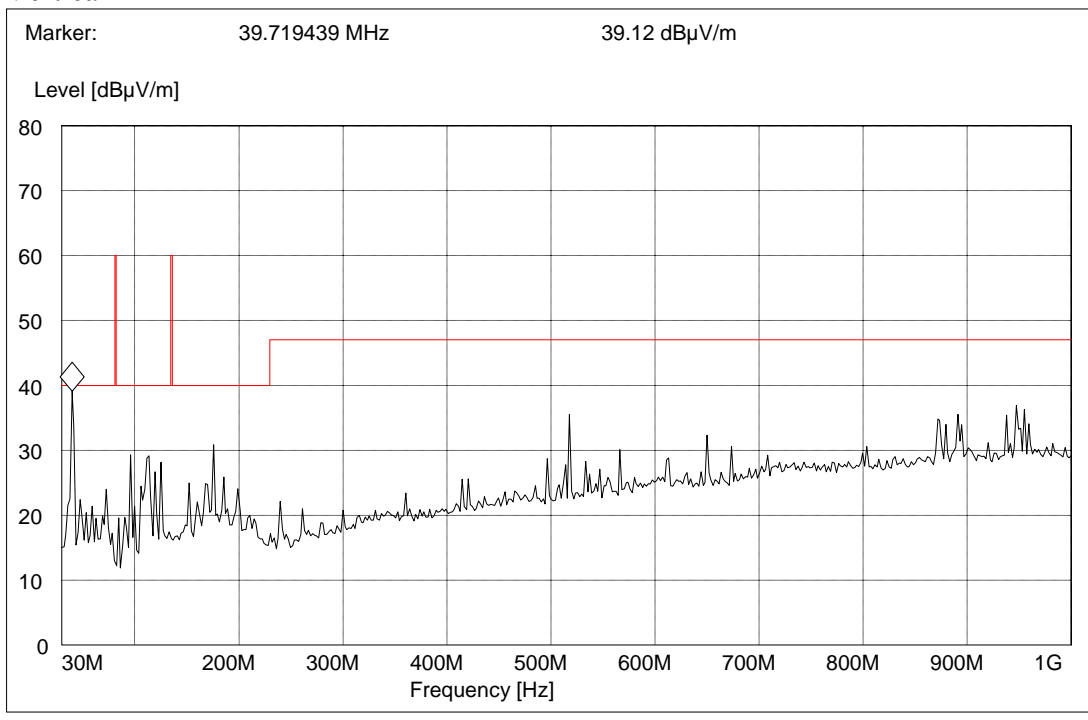
Antenna Polarization	Frequency [MHz]	Quasi-Peak		Average	
		Disturbance level [dB(μV/m)]	Permitted limit [dB(μV/m)]	Disturbance level [dB(μV/m)]	Permitted limit [dB(μV/m)]
H	39.719	21.4	40.0	/	/
H	214.669	25.3	47.0	/	/
H	201.062	24.7	40.0	/	/
V	39.719	23.4	47.0	/	/
V	125.251	29.3	47.0	/	/
V	517.916	28.4	47.0	/	/

Remark: The average limits apply to magnetron driven equipment only. If magnetron driven equipment exceeds the quasi-peak limit at certain frequencies, then the measurement shall be repeated at these frequencies with the average detector and the average limits specified apply.

4.7.5 Test Curve Horizontal



Vertical



4.7.6 Measurement uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with CISPR 16-4-2:2003.

Measurement uncertainty of radiated emission: 4.76 dB.

The measurement uncertainty is given with a confidence of 95%, $k=2$.

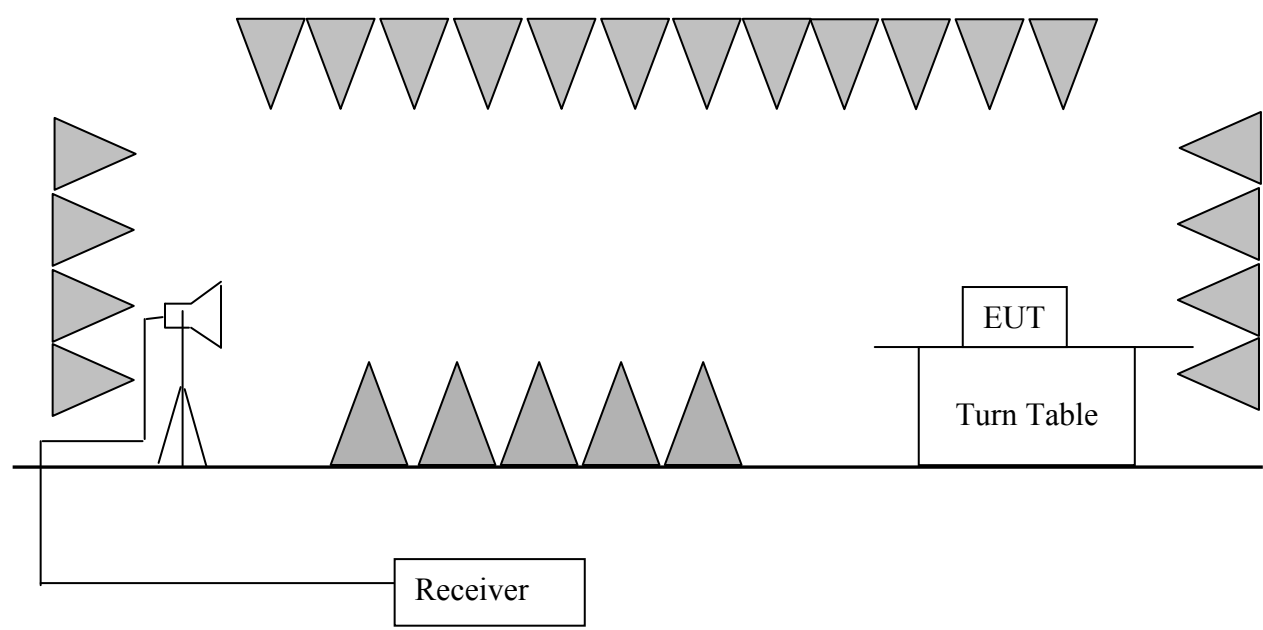
4.8 EN 55011 Radiated Emission (Electric Field, 1-18GHz)

Test Result: Pass

4.8.1 Used Test Equipment

Equipment No.	Equipment	Model	Manufacturer
EMC051	EMI test receiver	ESIB-26	R&S
EMC052	Spectrum Analyzer	FSP30	R&S
EMC053	Horn Antenna	HF906	R&S
EMC056	Preamp	JCA218-309	JCA
EMC057	Anechoic Chamber	9m×6m×5.7m	TDK

4.8.2 Block Diagram of Test Setup



4.8.3 Test Setup and Procedure

The measurement was applied in a semi-anechoic chamber with absorbing material placed on the ground. The EUT were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turntable varied every 30 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna pole. The antenna was set as same as the height of the radiation centre of the EUT.

Horn antenna was used as receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement.

The frequency range from 1 GHz to 18 GHz was checked

4.8.4 Test Data

Peak Measurement (RBW=1MHz, VBW=1MHz)

Antenna Polarization	Frequency [GHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	14.723	76.9	92.0
Vertical	14.723	76.1	92.0

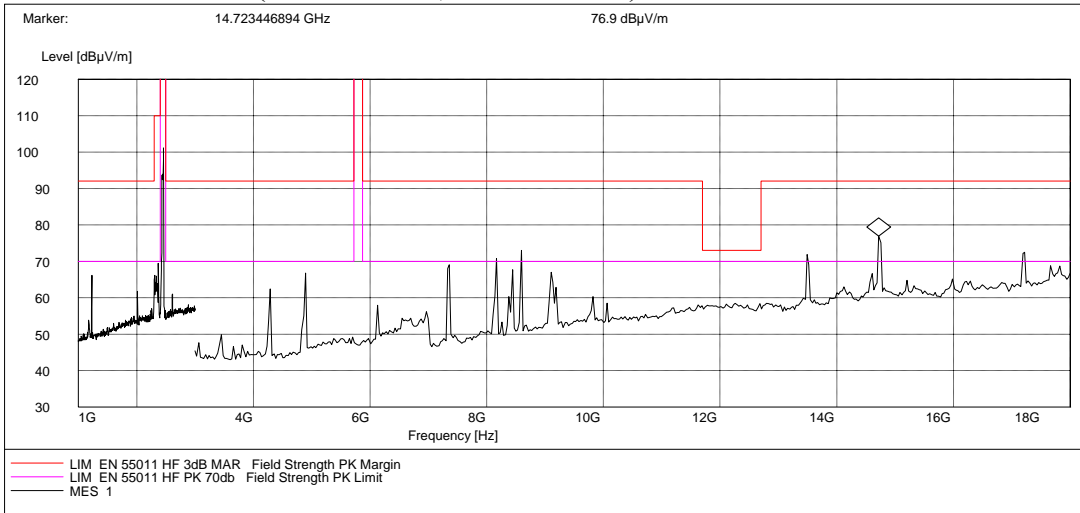
Weighted Measurement (RBW=1MHz, VBW=10Hz)

Antenna Polarization	Frequency [GHz]	Measured Net at 3m [dB(μV/m)]	Limit at 3m [dB(μV/m)]
Horizontal	2.015	43.6	60.0
Horizontal	14.718	49.3	60.0
Vertical	1.821	40.2	60.0
Vertical	14.726	45.9	60.0

4.8.5 Test Curve

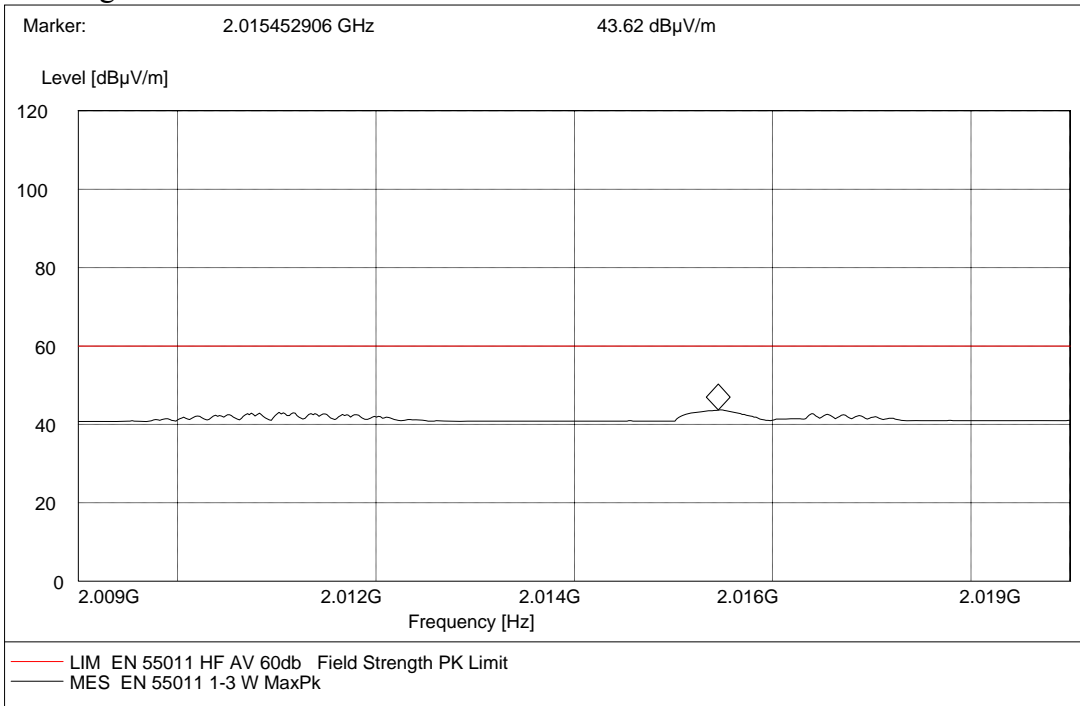
Horizontal:

Peak Measurement (RBW=1MHz, VBW=1MHz) 1-18 GHz

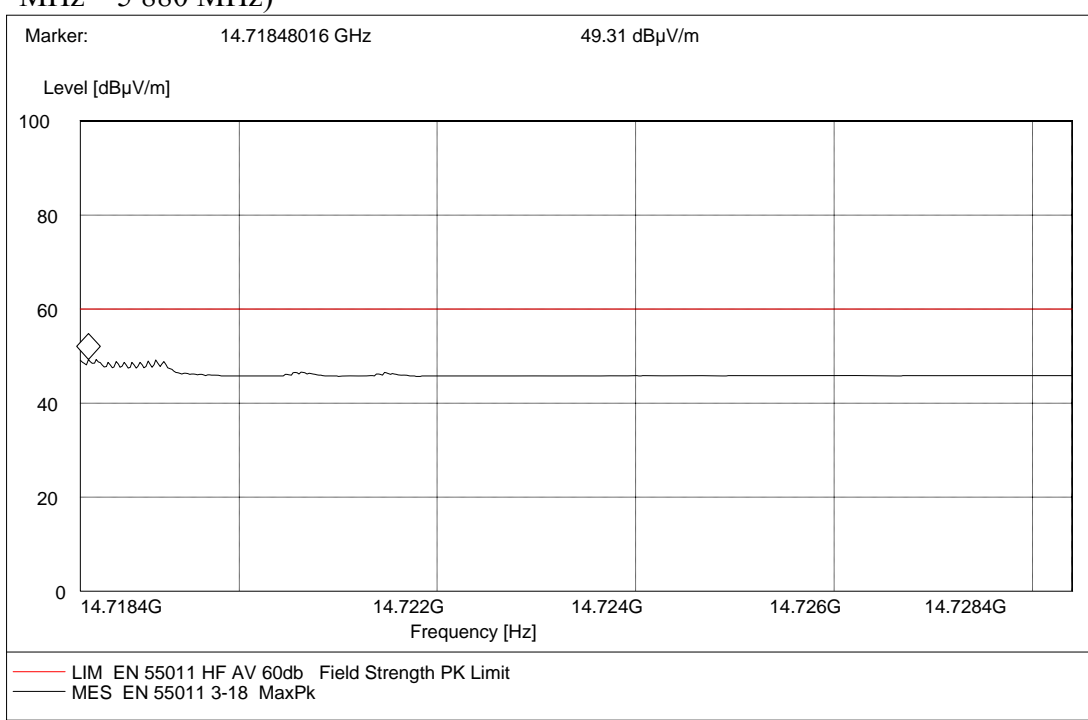


Weighted Measurement (RBW=1MHz, VBW=10Hz)

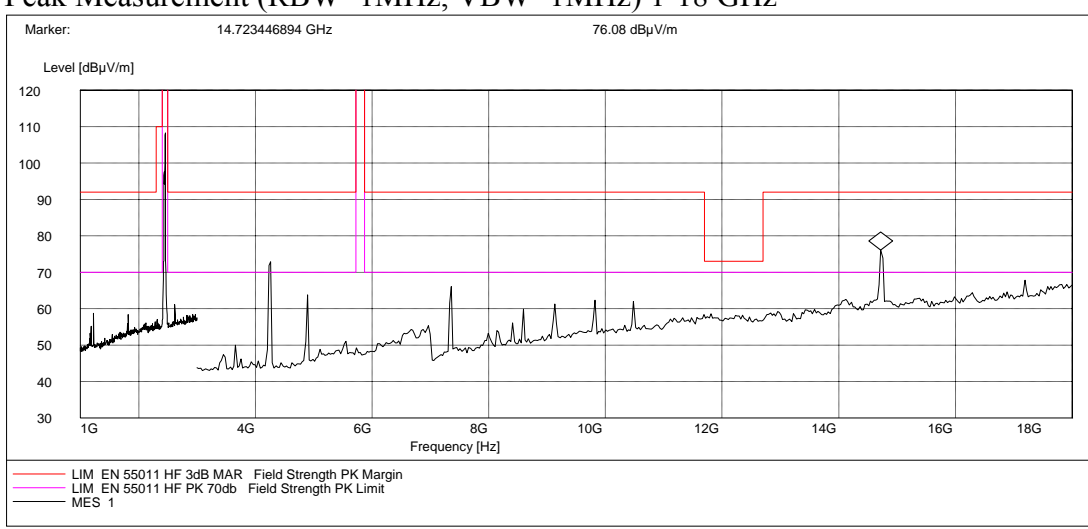
The highest emission in the 1 005 MHz – 2 395 MHz band



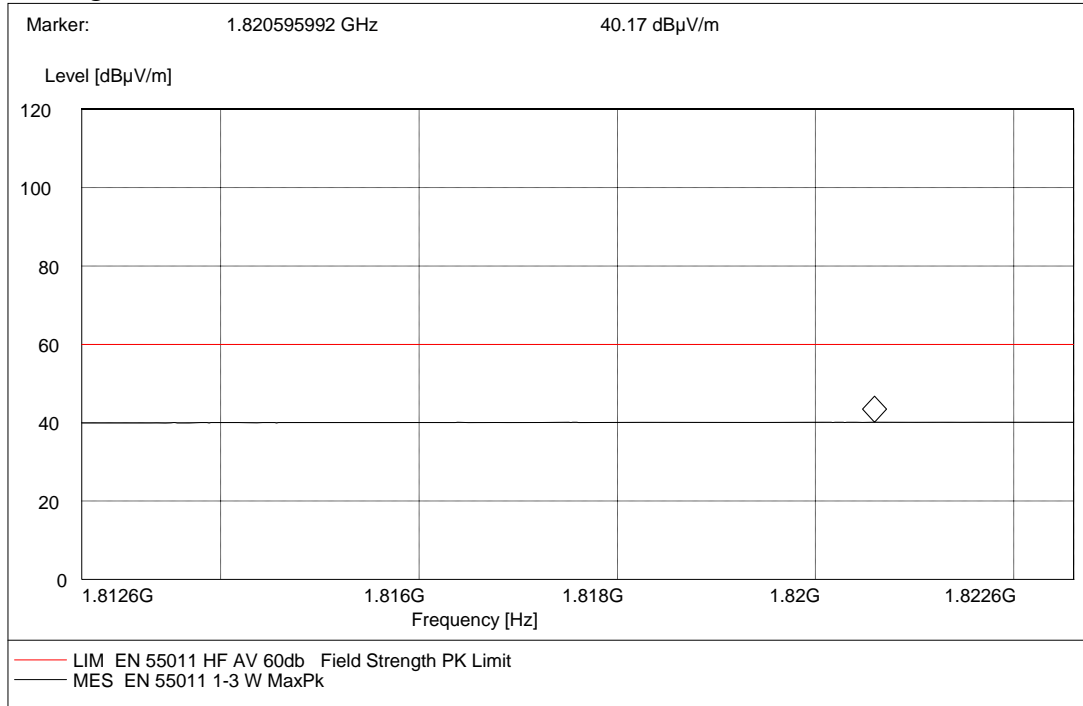
The highest emission in the 2 505 MHz to 17 995 MHz band (outside the band 5 720 MHz – 5 880 MHz)



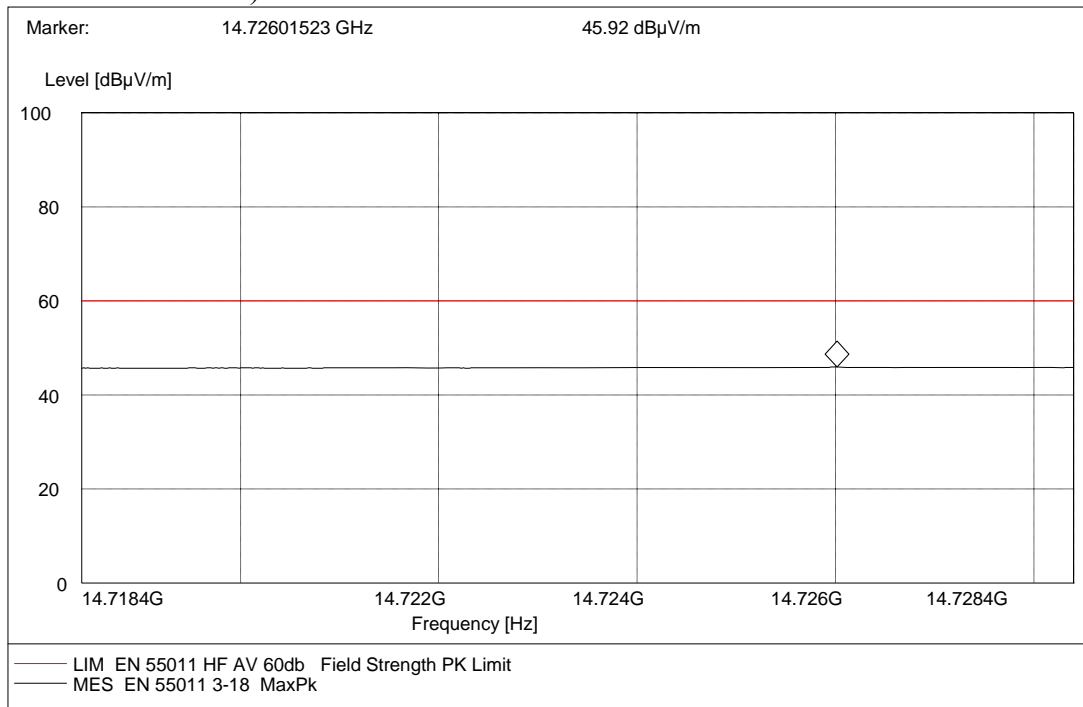
Vertical
 Peak Measurement (RBW=1MHz, VBW=1MHz) 1-18 GHz



Weighted Measurement (RBW=1MHz, VBW=10Hz)
 The highest emission in the 1 005 MHz – 2 395 MHz band



The highest emission in the 2 505 MHz to 17 995 MHz band (outside the band 5 720 MHz – 5 880 MHz)



4.8.6 Measurement uncertainty

Measurement uncertainty is under consideration according to CISPR 16-4-2:2003.

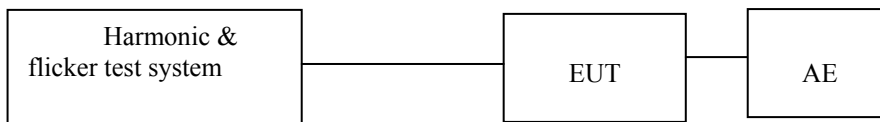
5 Harmonic of Current

Test Result: Pass

5.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC048	Harmonic /Flicker analyser	5001IX-CTS-400	California Instruments

5.2 Block Diagram of Test Setup



5.3 Test Setup and Procedure

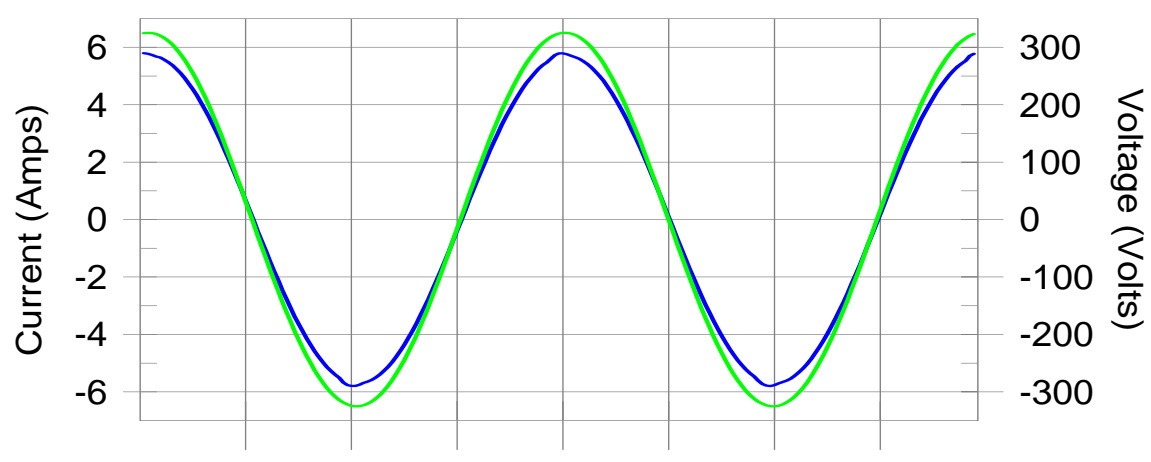
Harmonics of the fundamental current were measured up to 40 order harmonics using a digital power meter with an analogue output and frequency analyser which was integrated in the harmonic & flicker test system. The measurements were carried out under steady conditions.

5.4 Test Data
Grill Mode

Harmonics – Class-A (Run time) incl. inter-harmonics

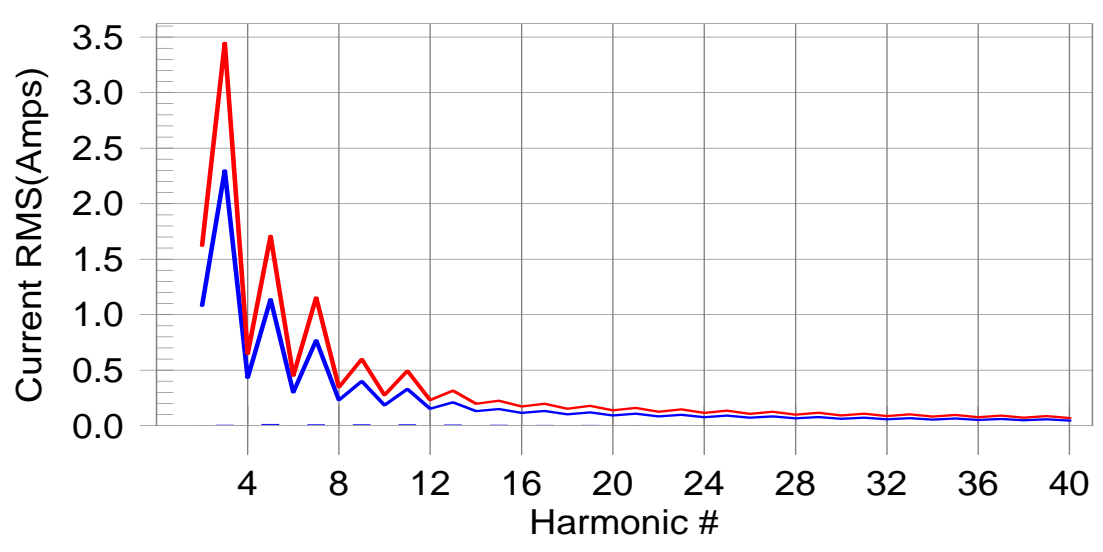
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #0 with 0.0% of the limit.



Current Test Result Summary (Run time)

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

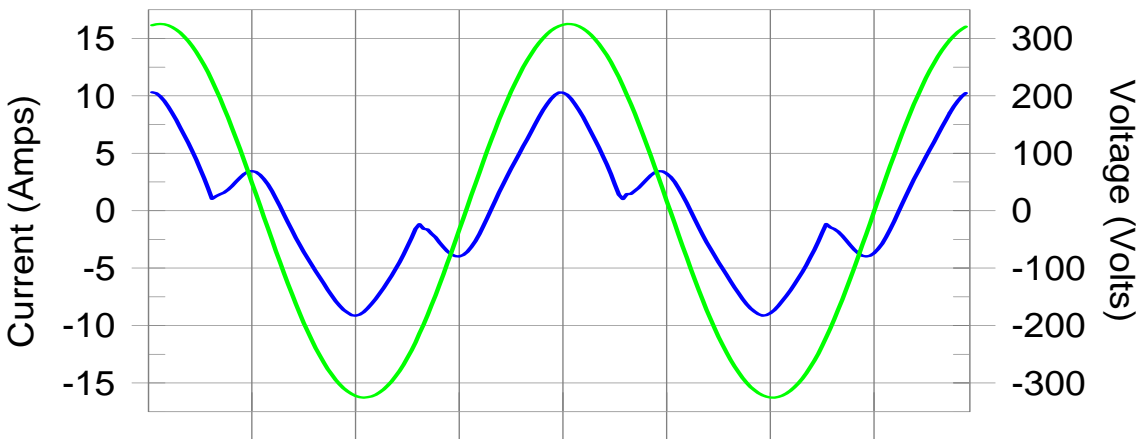
V_RMS (Volts):	230.14	Frequency(Hz):	50.00
I_Peak (Amps):	5.809	I_RMS (Amps):	4.062
I_Fund (Amps):	4.062	Crest Factor:	1.433
Power (Watts):	934.5	Power Factor:	1.000

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.002	1.620	N/A	Pass
3	0.006	2.300	N/A	0.007	3.450	N/A	Pass
4	0.001	0.430	N/A	0.002	0.645	N/A	Pass
5	0.012	1.140	N/A	0.012	1.710	N/A	Pass
6	0.001	0.300	N/A	0.001	0.450	N/A	Pass
7	0.008	0.770	N/A	0.009	1.155	N/A	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.009	0.400	N/A	0.009	0.600	N/A	Pass
10	0.001	0.184	N/A	0.001	0.276	N/A	Pass
11	0.007	0.330	N/A	0.008	0.495	N/A	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.006	0.210	N/A	0.007	0.315	N/A	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.006	0.150	N/A	0.006	0.225	N/A	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.004	0.132	N/A	0.004	0.198	N/A	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.003	0.118	N/A	0.003	0.178	N/A	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.002	0.107	N/A	0.003	0.161	N/A	Pass
22	0.000	0.084	N/A	0.000	0.125	N/A	Pass
23	0.002	0.098	N/A	0.002	0.147	N/A	Pass
24	0.000	0.077	N/A	0.000	0.115	N/A	Pass
25	0.001	0.090	N/A	0.001	0.135	N/A	Pass
26	0.000	0.071	N/A	0.000	0.107	N/A	Pass
27	0.001	0.083	N/A	0.001	0.125	N/A	Pass
28	0.000	0.066	N/A	0.000	0.099	N/A	Pass
29	0.001	0.078	N/A	0.001	0.116	N/A	Pass
30	0.000	0.061	N/A	0.000	0.092	N/A	Pass
31	0.001	0.073	N/A	0.001	0.109	N/A	Pass
32	0.000	0.058	N/A	0.000	0.086	N/A	Pass
33	0.001	0.068	N/A	0.001	0.102	N/A	Pass
34	0.000	0.054	N/A	0.000	0.081	N/A	Pass
35	0.001	0.064	N/A	0.001	0.096	N/A	Pass
36	0.000	0.051	N/A	0.000	0.077	N/A	Pass
37	0.001	0.061	N/A	0.001	0.091	N/A	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.001	0.058	N/A	0.001	0.087	N/A	Pass
40	0.000	0.046	N/A	0.000	0.069	N/A	Pass

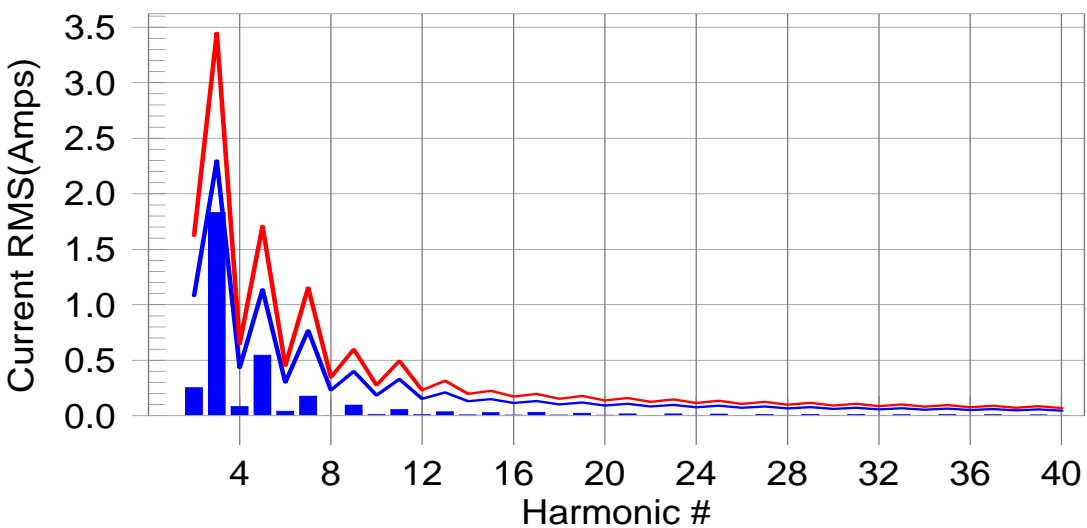
100% micro power
Harmonics – Class-A per Ed. 4.0 (2014)(Run time) incl. inter-harmonics

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonic was #3 with 79.7% of the limit.



Current Test Result Summary (Run time)

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

V_RMS (Volts):	230.11	Frequency(Hz):	50.00
I_Peak (Amps):	10.323	I_RMS (Amps):	5.512
I_Fund (Amps):	5.108	Crest Factor:	1.874
Power (Watts):	1170.4	Power Factor:	0.937

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.254	1.080	23.5	0.299	1.620	18.5	Pass
3	1.833	2.300	79.7	1.951	3.450	56.6	Pass
4	0.084	0.430	19.6	0.097	0.645	15.1	Pass
5	0.546	1.140	47.9	0.570	1.710	33.3	Pass
6	0.042	0.300	14.0	0.047	0.450	10.3	Pass
7	0.177	0.770	23.0	0.178	1.155	15.4	Pass
8	0.004	0.230	N/A	0.006	0.345	N/A	Pass
9	0.096	0.400	24.0	0.102	0.600	17.0	Pass
10	0.011	0.184	N/A	0.012	0.276	N/A	Pass
11	0.056	0.330	16.9	0.059	0.495	12.0	Pass
12	0.010	0.153	N/A	0.011	0.230	N/A	Pass
13	0.036	0.210	17.1	0.038	0.315	12.0	Pass
14	0.008	0.131	N/A	0.008	0.197	N/A	Pass
15	0.029	0.150	N/A	0.031	0.225	N/A	Pass
16	0.007	0.115	N/A	0.008	0.173	N/A	Pass
17	0.031	0.132	23.7	0.032	0.198	16.3	Pass
18	0.006	0.102	N/A	0.007	0.153	N/A	Pass
19	0.023	0.118	N/A	0.024	0.178	N/A	Pass
20	0.005	0.092	N/A	0.006	0.138	N/A	Pass
21	0.017	0.107	N/A	0.017	0.161	N/A	Pass
22	0.004	0.084	N/A	0.005	0.125	N/A	Pass
23	0.017	0.098	N/A	0.018	0.147	N/A	Pass
24	0.003	0.077	N/A	0.004	0.115	N/A	Pass
25	0.015	0.090	N/A	0.016	0.135	N/A	Pass
26	0.004	0.071	N/A	0.004	0.107	N/A	Pass
27	0.013	0.083	N/A	0.014	0.125	N/A	Pass
28	0.004	0.066	N/A	0.004	0.099	N/A	Pass
29	0.013	0.078	N/A	0.014	0.116	N/A	Pass
30	0.004	0.061	N/A	0.005	0.092	N/A	Pass
31	0.011	0.073	N/A	0.012	0.109	N/A	Pass
32	0.004	0.058	N/A	0.005	0.086	N/A	Pass
33	0.010	0.068	N/A	0.010	0.102	N/A	Pass
34	0.004	0.054	N/A	0.004	0.081	N/A	Pass
35	0.011	0.064	N/A	0.011	0.096	N/A	Pass
36	0.003	0.051	N/A	0.004	0.077	N/A	Pass
37	0.009	0.061	N/A	0.010	0.091	N/A	Pass
38	0.004	0.048	N/A	0.004	0.073	N/A	Pass
39	0.008	0.058	N/A	0.009	0.087	N/A	Pass
40	0.004	0.046	N/A	0.004	0.069	N/A	Pass

5.5 Measurement Uncertainty

The measurement uncertainty for harmonic test is under consideration according to CISPR 16-4-2:2003.

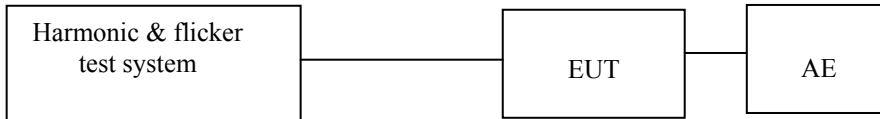
6 Flicker

Test Result: Pass

6.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC048	Harmonic /Flicker analyser	5001IX-CTS-400	California Instruments

6.2 Block Diagram of Test Setup



6.3 Test Setup and Procedure

6.3.1 Definition

- Flicker: impression of unsteadiness of visual sensation induced by a lighting stimulus whose luminance or spectral distribution fluctuates with time.
- Pst: Short-term flicker indicator The flicker severity evaluated over a short period (in minutes); Pst=1 is the conventional threshold of irritability
- Plt: long-term flicker indicator; the flicker severity evaluated over a long period (a few hours). Using successive Pst value.
- dc: the relative steady-state voltage change
- dmax: the maximum relative voltage change
- d(t): the value during a voltage change

6.3.2 Test condition

The EUT was set to produce the most unfavourable sequence of voltage changes.

6.4 Test Data

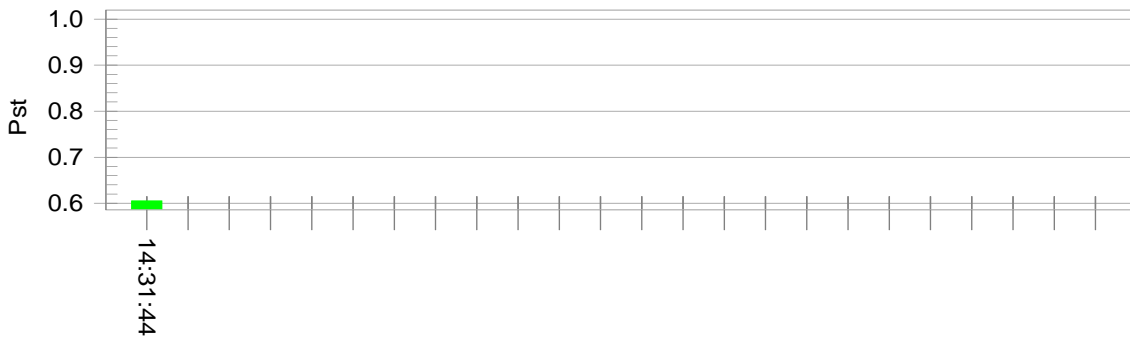
Operation Mode: 20% Micro Power

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

Test Result: Pass
 Pst, and limit line

Status: Test Completed

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.01		
Highest dt (%):	2.36	Test limit (%):	N/A N/A
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.87	Test limit (%):	3.30 Pass
Highest dmax (%):	2.34	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.605	Test limit:	1.000 Pass



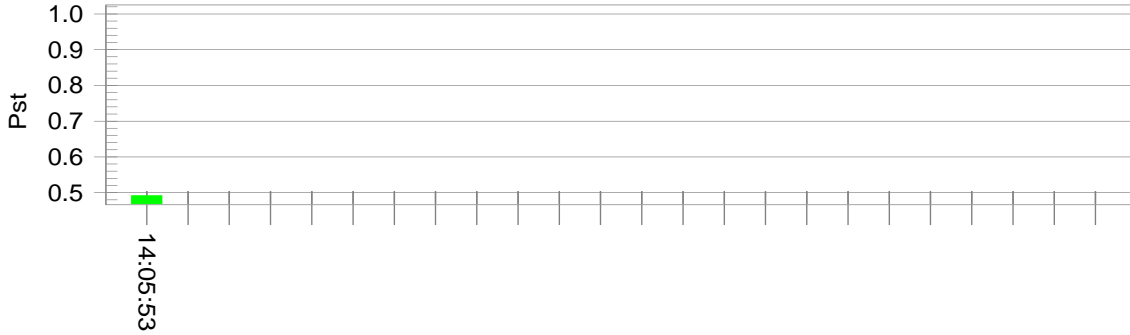
Operation Mode: 50% Micro Power

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

Test Result: Pass
Pst_i and limit line

Status: Test Completed

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.02		
Highest dt (%):	1.46	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.79	Test limit (%):	3.30
Highest dmax (%):	1.47	Test limit (%):	4.00
Highest Pst (10 min. period):	0.492	Test limit:	1.000

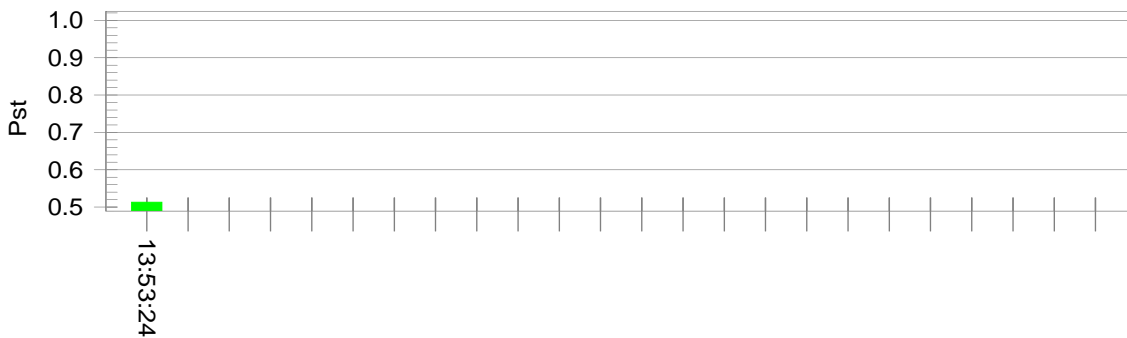
Operation Mode: 80% Micro Power

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

Test Result: Pass
Pst_i and limit line

Status: Test Completed

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	228.36		
Highest dt (%):	1.78	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.84	Test limit (%):	3.30
Highest dmax (%):	1.77	Test limit (%):	4.00
Highest Pst (10 min. period):	0.514	Test limit:	1.000
			Pass

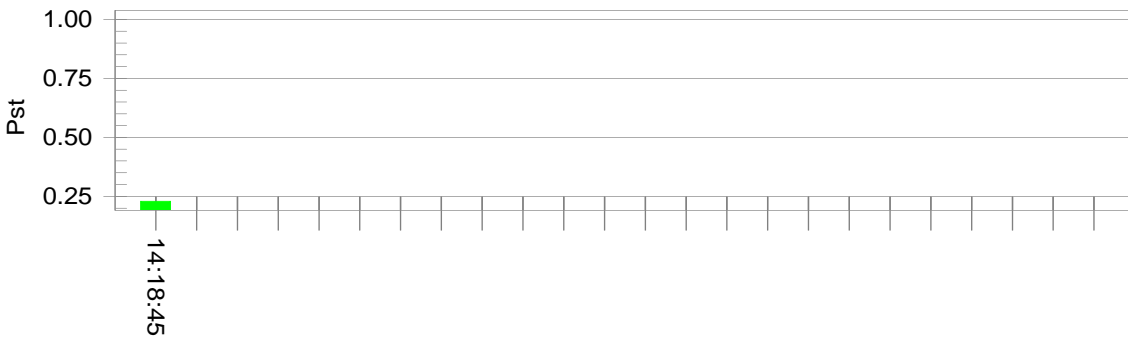
Operation Mode: Grill

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

Test Result: Pass
Pst, and limit line

Status: Test Completed

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt):	228.50		
Highest dt (%):	0.70	Test limit (%):	N/A N/A
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.69	Test limit (%):	3.30 Pass
Highest dmax (%):	0.70	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.230	Test limit:	1.000 Pass

6.5 Measurement Uncertainty

Measurement uncertainty for voltage fluctuation and flicker is under consideration according to CISPR 16-4-2:2003.

7 EMS TEST

Performance Criteria:

- Criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permission loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.
- Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permission loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description, and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
- Criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instruction for use.

Measurement Uncertainty

According to CISPR 16-4-2:2003, measurement uncertainty to immunity test is under consideration.

7.1 EN 61000-4-2(Pursuant to EN 55014-2) Electrostatic Discharge Immunity

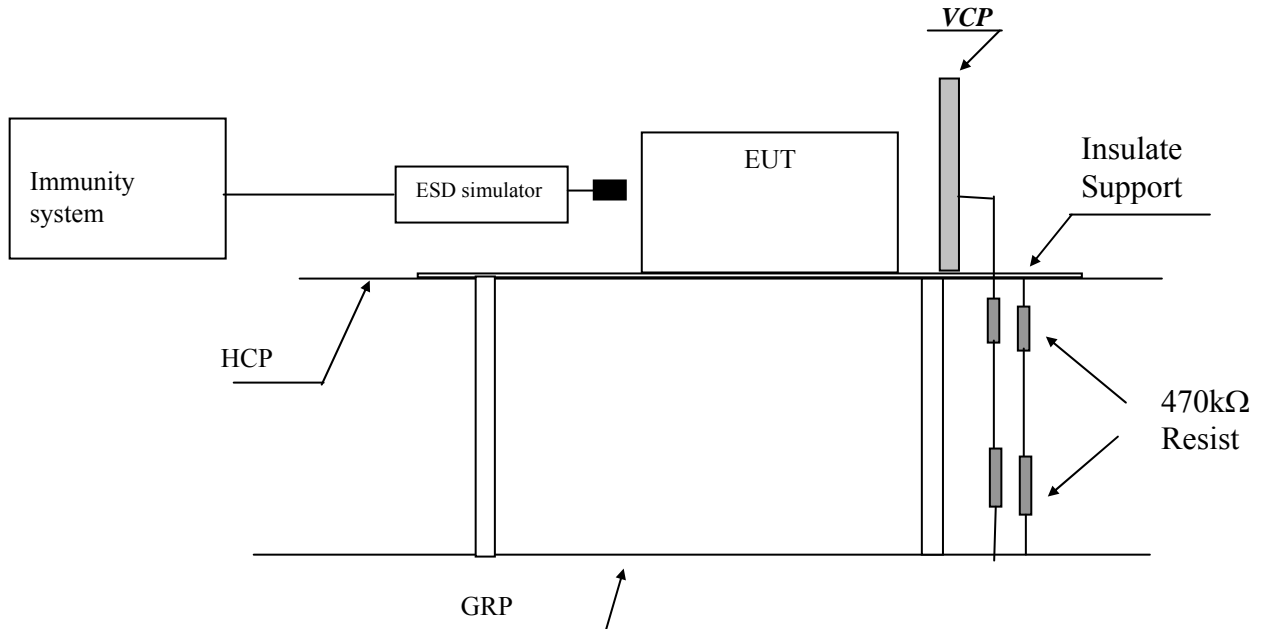
Performance criterion: B

Test Result: Pass

7.1.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC001	ESD tester	PESD3010	Haefely

7.1.2 Block Diagram of Test Setup



Note: HCP means Horizontal Coupling Plane,
 VCP means Vertical Coupling Plane
 GRP means Ground Reference Plane

7.1.3 Test Setup and Procedure

The EUT was put on a 0.8m high wooden table/0.1m high for floor standing equipment standing on the ground reference plane (GRP) 3m by 2m in size, made by iron 1.0 mm thick.

A horizontal coupling plane (HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size & HCP were constructed from the same material type & thickness as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end.

The distance between EUT and any of the other metallic surface excepted the GRP, HCP & VCP was greater than 1m.

The EUT was arranged and connected according to its functional requirements.

Direct static electricity discharges was applied only to those points and surface which are accessible to personnel during normal usage.

On each preselected points 10 times of each polarity single discharge were applied The time interval between successive single discharges is at least 1s.

The ESD generator was held perpendicular to the surface to which the discharge is applied. The discharge return cable of the generator was kept at a distance of 0.2m whilst the discharge is being applied. During the contact discharges, the tip of the discharge electrode was touch the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT.

Indirect discharge was conducted to objects placed near the EUT, simulated by applying the discharges of the ESD generator to a coupling plane, in the contact discharge mode.

After each discharge, the ESD generator was removed from the EUT, the generator is then retriggered for a new single discharge. For ungrounded product, a grounded carbon fibre brush with bleeder resistors ($2 \times 470 \text{ k}\Omega$) in the grounding cable was used after each discharge to remove remnant electrostatic voltage.

10 times of each polarity single discharge were applied to HCP and VCP. The detail selected points are listed in the following table.

7.1.4 Test Result

Direct Application of ESD

Direct Contact Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result (Pursuant to EN 55014-2, criterion B)	Discharged Points
4	20	Pass	Accessible metal parts of the EUT Conductive substrate with coating which is not declared to be insulating

Direct Air Discharge

Applied Voltage (kV)	No. of Discharge for each point	Result (Pursuant to EN 55014-2, criterion B)	Discharged Points
8	20	Pass	All accessible points where contact discharge cannot be applied such as Displays, Indicators light, Keyboard, Button, Switch, Knob, Air gap, Slots, Hole and so on

Indirect Application of ESD

Horizontal Coupling Plane under the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result (pursuant to EN 55014-2 criterion B)	Discharged Point
4	20	Pass	At the front edge of each HCP opposite the centre point of each unit of the EUT

Vertical Coupling Plane beside the EUT

Applied Voltage (kV)	No. of Discharge for each point	Result (pursuant to EN 55014-2 criterion B)	Discharged Point
4	20	Pass	The centre of the vertical edge of the coupling plane

7.2 EN 61000-4-6(Pursuant to EN 55014-2) Injected Current (0.15 MHz to 230 MHz)

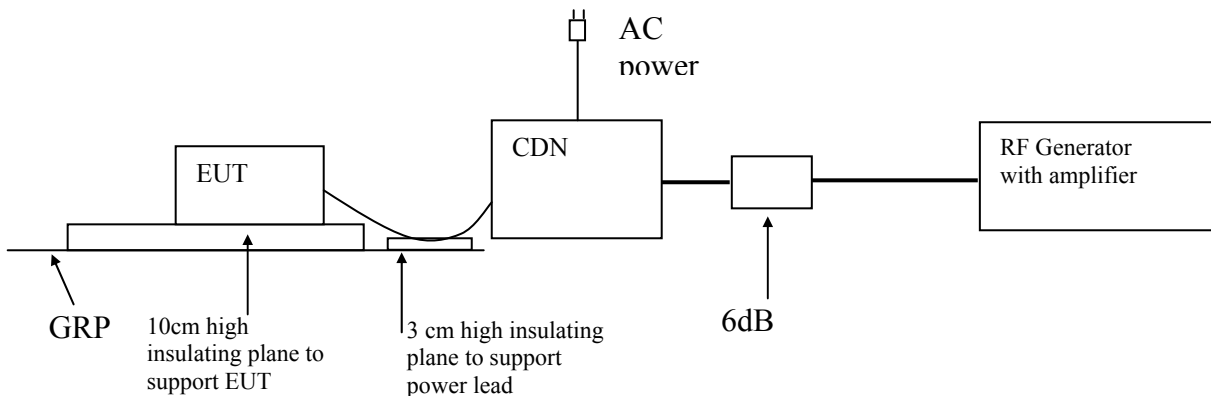
Performance criterion: A

Test Result: Pass

7.2.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC006	C/S test generator	CWS500C	EM Test
EMC009	CDN	M2/M3	EM Test
EMC011	6dB attenuator	ATT6/75	EM Test

7.2.2 Block Diagram of Test Setup



7.2.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.1m height above a ground reference Plane, arranged and connected to satisfy its functional requirement.

All relevant cables were provided with the appropriate coupling and decoupling devices at a distance between 0.1m and 0.3m from the projected geometry of the EUT on an insulating support of 0.03m height above the ground reference plane.

Test voltage was verified before each testing through power meter combined in the RF generator with AMP.

Dwell time was set to 3s and step was set as 1% to keep sufficient response time for EUT. The frequency from 0.15MHz to 230MHz was checked.

7.2.4 Test Result

Port:	Frequency (MHz)	Level (Pursuant to EN55014-2)	Result
A.C. Power Lines	0.15 to 230	3V (r.m.s.)	Pass
D.C. Power Lines	0.15 to 230	1V (r.m.s.)	N/A
Signal Lines	0.15 to 230	1V (r.m.s.)	N/A
Control Lines	0.15 to 230	1V (r.m.s.)	N/A

7.3 EN 61000-4-4(Pursuant to EN 55014-2) Electrical Fast Transient/Burst

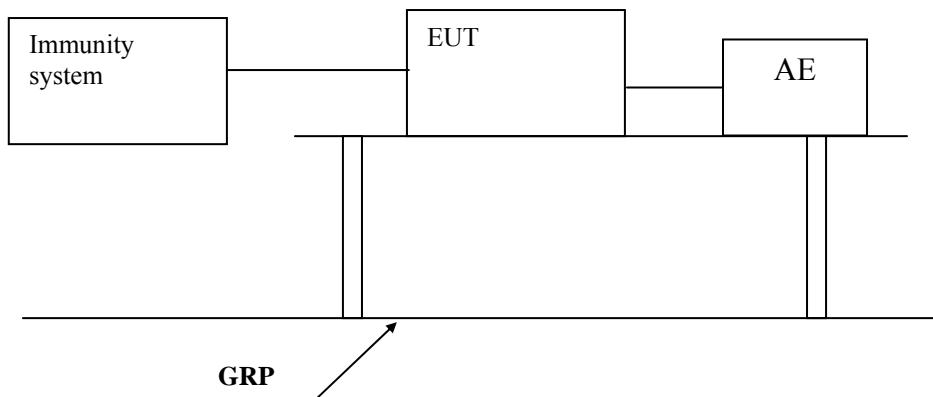
Performance criterion: B

Test Result: Pass

7.3.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC046	Fast Transient/Burst Immunity tester	NSG 3040	TESEQ

7.3.2 Block Diagram of Test Setup



7.3.3 Test Setup and Procedure

The EUT was placed on a 0.8m high wooded table (for floor standing EUT, was placed on a 0.1m high wooden support above GRP), standing on the ground reference plane 3m by 2m in size, made by iron 1mm thick.

The distance between the EUT and any other of the metallic surface except the GRP is greater than 0.5m.

The main lead excess than 1m is gathered into avoid a flat coil with a 0.4m diameter and situated at a distance of 0.1m above the ground reference plane to insure the distance between the coupling device and the EUT were 1m or less.

The EUT was arranged and connected to satisfy its functional requirement and supplied by the coupling-decoupling network.

7.3.4 Test Result

Level (Pursuant to EN55014-2)	Polarity	A.C. Power supply line and protective earth terminal	D.C. Power Lines, Signal Line & Control Line
0.5kV	+	N/A	N/A
0.5kV	-	N/A	N/A
1kV	+	Pass	N/A
1kV	-	Pass	N/A

7.4 EN 61000-4-5(Pursuant to EN 55014-2) Surge Immunity

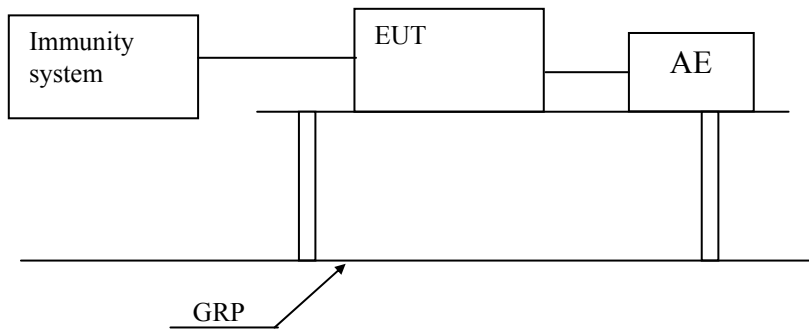
Performance criterion: B

Test Result: Pass

7.4.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC005	Surge Immunity test system	NSG2050	Schaffner
EMC005	Pulse coupling network	CDN 133	Schaffner

7.4.2 Block Diagram of Test Setup



7.4.3 Test Setup and Procedure

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network.

Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines and to provide sufficient decoupling impedance to the surge wave so that the specified wave may be developed on the lines under test.

The EUT was arranged and connected according to its functional requirements. The EUT was placed on a 0.1m high wooden support above the GRP, supplied by the coupling-decoupling network, and arranged and connected to satisfy its functional requirement and the power cord between the EUT and the coupling/decoupling network was less than 2 meters.

Surge is applied to the EUT power supply terminals.

7.4.4 Test Result

Level (Pursuant to EN 55014-2)	Result
Between Phase And Phase: 1kV	N/A
Between Phase And Neutral: 1kV	Pass
Between Phase And Earth: 2kV	Pass
Between Neutral And Earth: 2kV	Pass

7.5 EN 61000-4-11(Pursuant to EN 55014-2) Voltage Dips and Interruptions

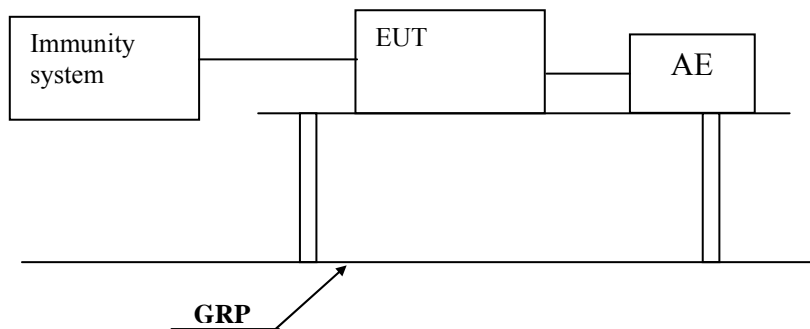
Performance criterion: C

Test Result: Pass

7.5.1 Used Test Equipment

Equip. No.	Equipment	Model	Manufacturer
EMC048	Programmable power source	5001IX-CTS-400	California Instruments

7.5.2 Block Diagram of Test Setup



7.5.3 Test Setup and Procedure

The EUT was placed on an insulating support of 0.8m height, standing on a ground reference plane, and arranged and connected to satisfy its functional requirement

The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer.

The EUT was tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10 s minimum. Each representative mode of operation was tested.

7.5.4 Test Result

Test condition (Pursuant to EN 55014-2)				
Test Level in %U _T	50 Hz		60 Hz	
	Duration	Result	Duration	Result
0	0.5	PASS	0.5	N/A
40	10	PASS	12	N/A
70	25	PASS	30	N/A

Remark: U_T is the rated voltage for the equipment.

7.6 EN 61000-4-3(Pursuant to EN 55014-2) Radiated Electromagnetic Field Immunity

Performance criterion: A

Test Result: Not Applicable

Remark:

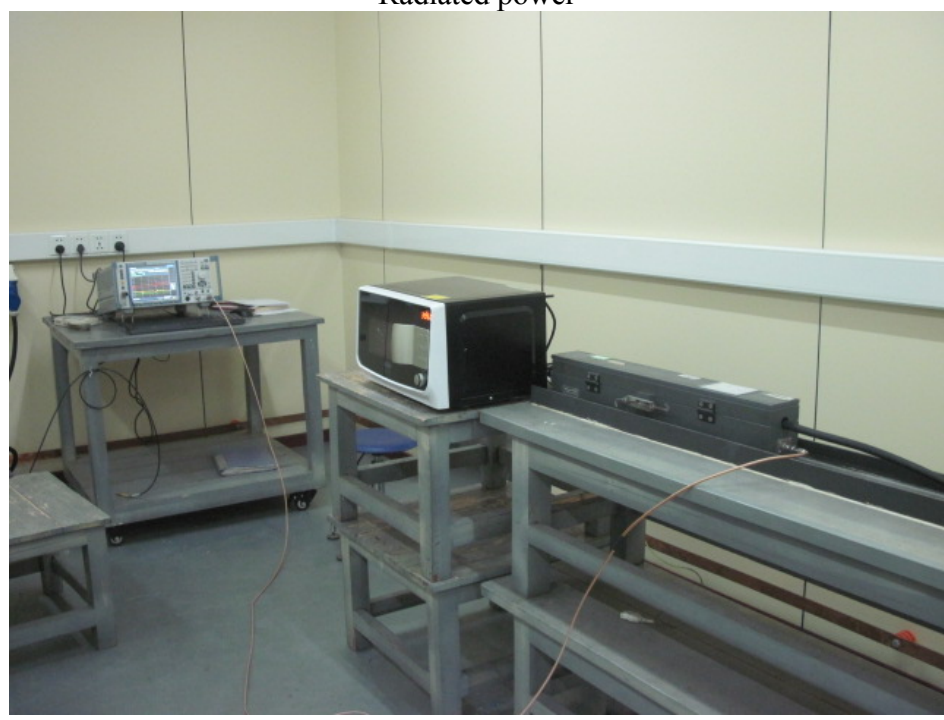
Containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15 MHz.

8 Appendix I - Photos of test setup

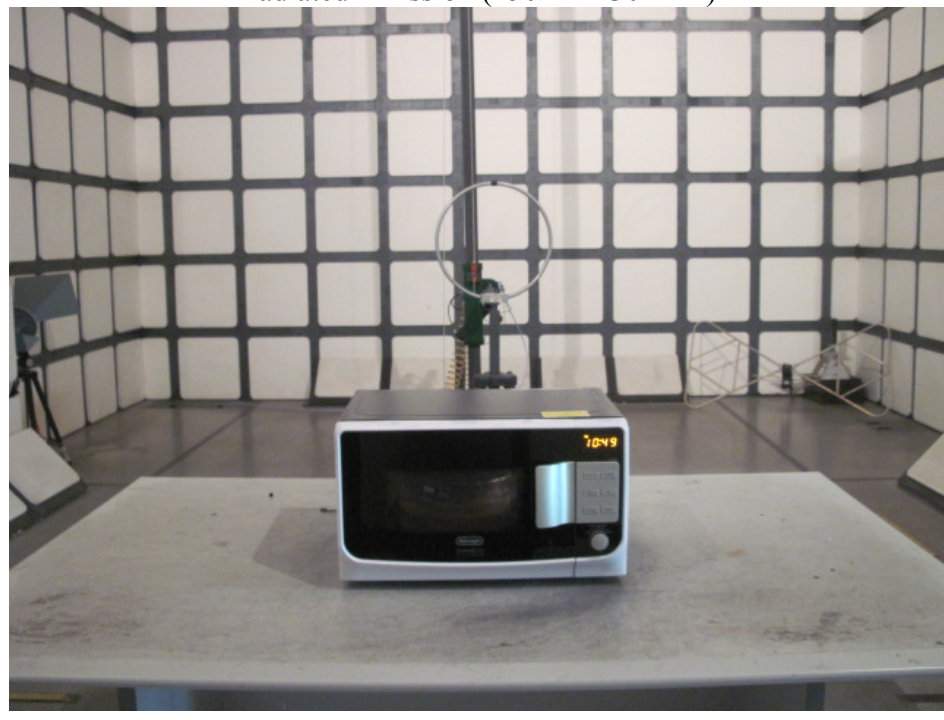
Conducted Emission



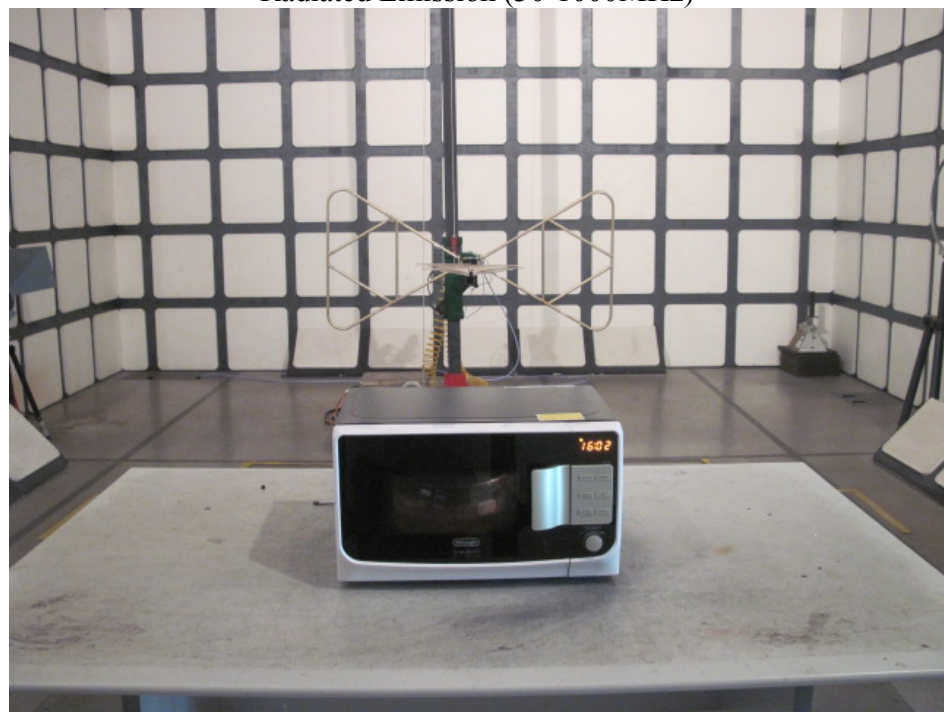
Radiated power



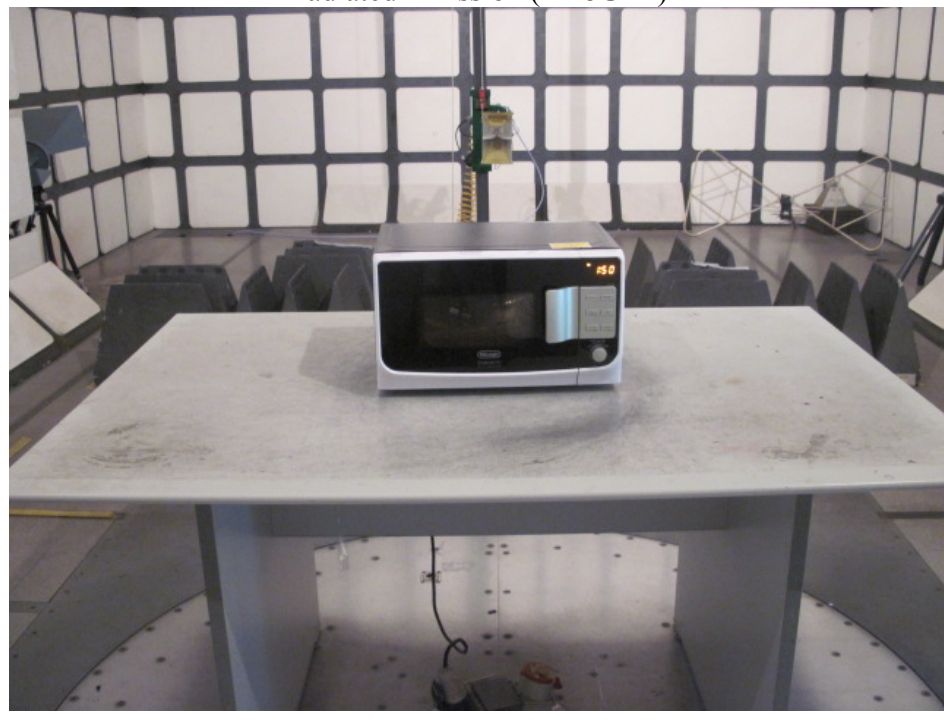
Radiated Emission (150 kHz-30MHz)



Radiated Emission (30-1000MHz)



Radiated Emission (1-18GHz)



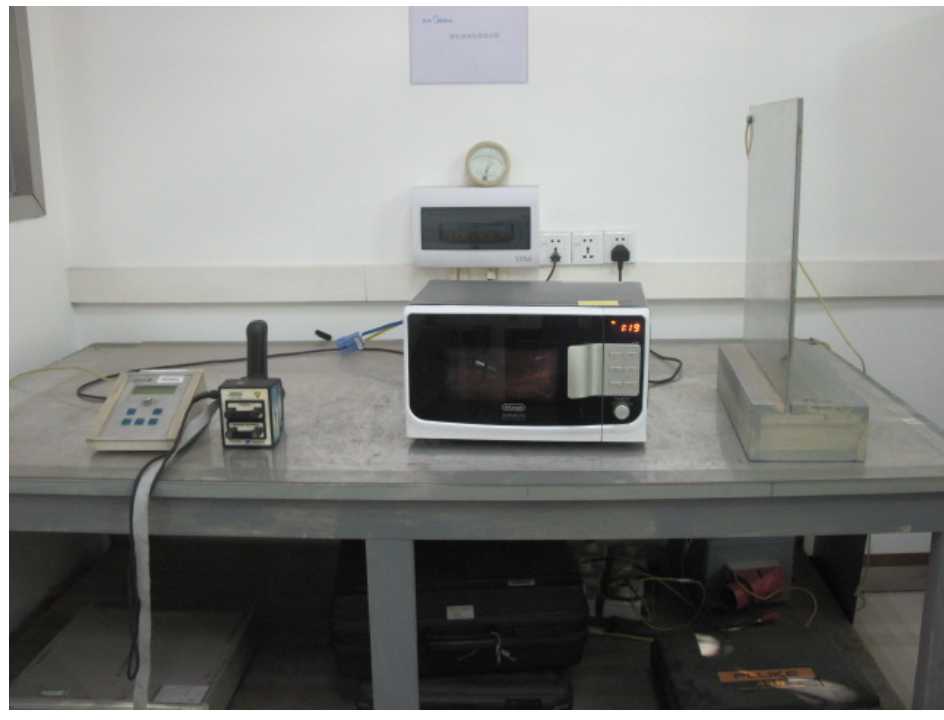
Harmonics and Flicker, Dips



Surge



ESD



Conducted Immunity

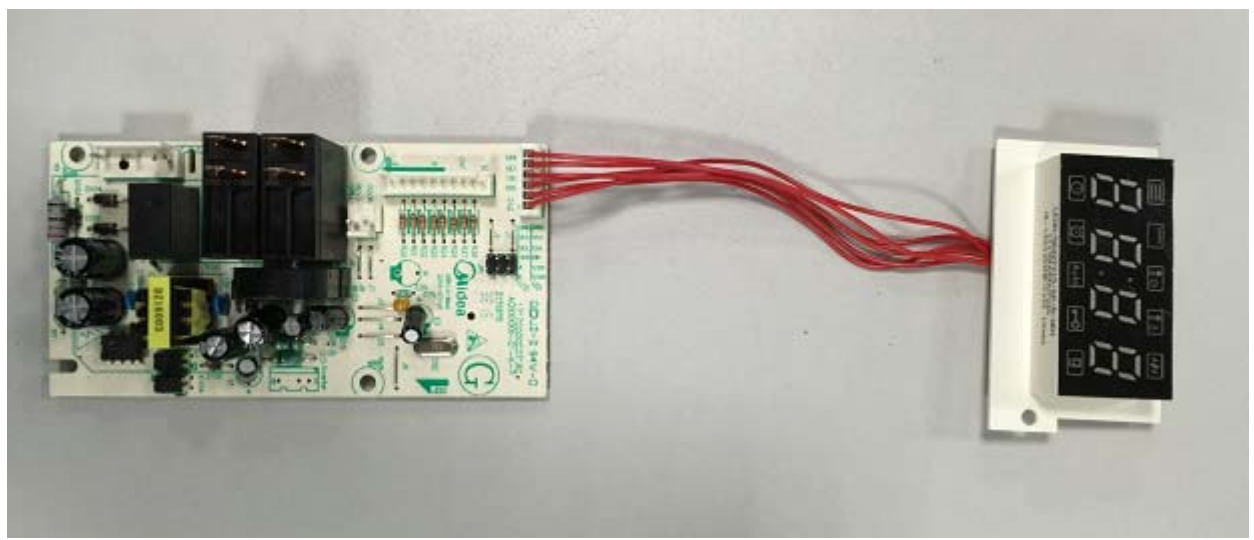
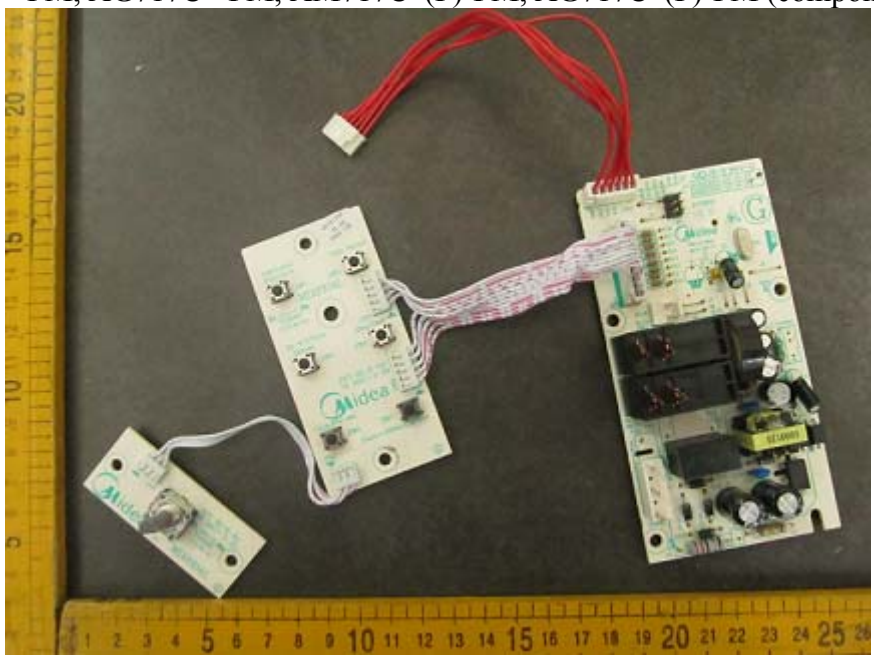


EFT

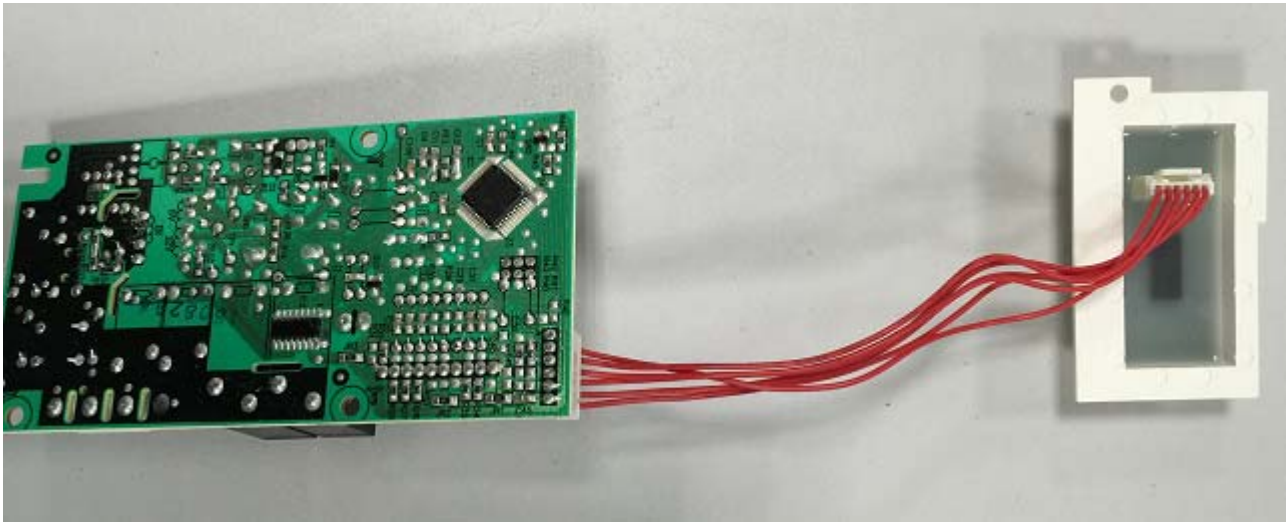
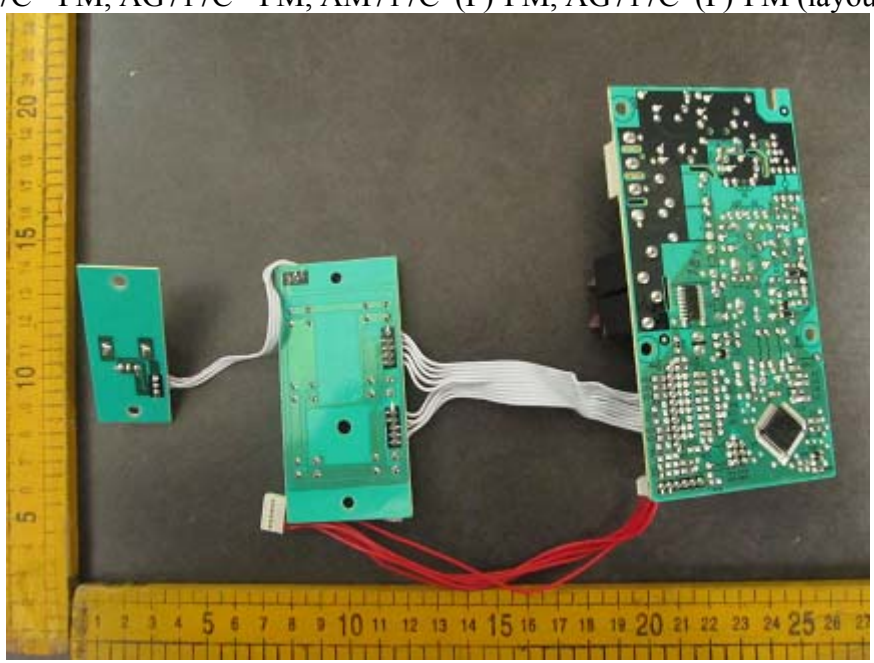


9 Appendix II - Photos of EUT

Alternative PCB for AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM (component side):



Alternative PCB for AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM (layout side):



Alternative construction (without bracket of thermal cut-out on magnetron):



Alternative waveguide cover:



Overall view of AM720C*-PM, AG720C*-PM, AM720C*(F)-PM, AG720C*(F)-PM, AM717C*-PM, AG717C*-PM, AM717C*(F)-PM, AG717C*(F)-PM (*= GN):

