Applicant：	Vecow Co., Ltd.
Address of Applicant：	3F, No. 10, Jiankang Rd., Zhonghe Dist., New Taipei City 23586, Taiwan.
Trade Name：	Vecow
Equipment Under Test：	LCD Monitor
Model Number：	MTD-6000
Series：	MTD-60xx

Matrix Test Laboratory
2F, No.146, Jian Yi Rd., Chung-Ho District,
New Taipei City, Taiwan, R.O.C.
TEL.：+886 2 2228-6610
FAX.：+886 2 2228-6580

Contents

Verification

Applicant：	Vecow Co., Ltd.
Manufacturer：	Cooperate Technology Co., Ltd.
Equipment Under Test：	LCD Monitor
Model Number：	MTD-6000
Series：	MTD-60xx
Sample Received Date：	2019-05-09

Test Standard：

Emission:	**Immunity:**
☒ EN 55032:2012 Class B	☒ EN 55024:2010
☒ IEC 61000-3-2:2014	☒ IEC 61000-4-2:2008
☒ IEC 61000-3-3:2013	☒ IEC 61000-4-3:2006+A1:2007+A2:2010
	☒ IEC 61000-4-4:2012
	☒ IEC 61000-4-5:2014
	☒ IEC 61000-4-6:2013
	☒ IEC 61000-4-8:2009
	☒ IEC 61000-4-11:2004

Remark:

This report is a copy of test report No.R19052902E which is hold by Cooperate Technology Co., Ltd.. Cooperate Technology Co., Ltd. granted authority to appoint Vecow Co., Ltd. as an agent. Therefore, Vecow Co., Ltd is authorized to use the testing data from the original test report and have a copy of it. The original test report No.R19052902E details the results of the test carried out on one sample. This report shows the EUT is technically compliant with the EN 55032 and EN 55024 official requirements. This report applies to the above sample only and shall not be reproduced in part without written approval of Matrix Test Laboratory.

Documented by: Jody Peng **Date:** 2019-08-05

Jody Peng/ ADM. Dept Staff

Tested by: Luke Lu **Date:** 2019-06-28

Luke Lu/ ENG. Dept. Staff

Approved by: Eason Hsieh **Date:** 2019-08-05

Eason Hsieh/ Approved Report Reviewer

Summary of Test Result – Emission

Test Standard	Test Item	Test Result	Remark
EN55032 Class B	Conducted Disturbance Test (at Mains Terminal)	Pass	Highest Emission L: 23.140MHz, Q.P.39.87dBuV, Margin -20.13 dB N: 0.433MHz, Q.P.37.02dBuV, Margin -20.18 dB A.V.31.63dBuV, Margin -15.57 dB
EN55032 Class B	Radiated Disturbance Test (Below 1GHz)	Pass	Highest Emission H: 501.42MHz, 35.07dBuV/m, Margin-1.93 dB Antenna Height 374 cm, Turntable Angle 195° V: 501.42MHz, 32.87dBuV/m, Margin-4.13 dB Antenna Height 110 cm, Turntable Angle 187°
EN55032 Class B	Radiated Disturbance Test (Above 1GHz)	N/A	The highest frequency of the internal sources of the EUT is less than 108MHz. Hence, up to 1GHz Radiated Measurement shall not be made.
IEC61000-3-2	Harmonic	Pass	Refer to Page 21
IEC61000-3-3	Flicker	Pass	Refer to Page 24

Measurement Uncertainty – Emission

The following measurement uncertainty has been calculated for Emission Tests performed on the EUT as specified in CISPR 16-4-2:

Test Item		Uncertainty
Conducted Emission		± 4.52dB
Radiated Emission	Below 1GHz	± 4.98dB
	Above 1GHz	± 4.32dB

This reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k = 2, providing a level of confidence of approximately 95%.

Summary of Test Result – Immunity

Test Standard	Test Item	Performance Criteria	Observed Result Class	Test Result
IEC61000-4-2	Electrostatic Discharge	B	A	Pass
IEC61000-4-3	Radiated Susceptibility	A	A	Pass
IEC61000-4-4	Electrical Fast Transient	B	A	Pass
IEC61000-4-5	Surge	B	A	Pass
IEC61000-4-6	Conducted Susceptibility	A	A	Pass
IEC61000-4-8	Magnetic Field	A	A	Pass
IEC61000-4-11	Voltage Dips and Interruption	Dips >95% B	A	Pass
		Dips 30% C	A	
		Interruptions >95% C	C	

Measurement Uncertainty – Immunity

It has been demonstrated that the test equipments for the above Immunity Tests meet the specified requirements in the standard with at least a 95% confidence.

1 General Description

1.1 Description of Equipment Under Test (EUT)

Equipment Under Test	:	LCD Monitor
Model Number	:	MTD-6000
Series	:	MTD-60xx
Applicant **Address of Applicant**	:	Vecow Co., Ltd. 3F, No. 10, Jiankang Rd., Zhonghe Dist., New Taipei City 23586, Taiwan
Manufacturer **Address of Manufacturer**	:	Cooperate Technology Co., Ltd. 8F. -2 No.4, Ln, 609, Sec. 5, ChongHsin Rd., Sanchong Dist., New Taipei City 24159, Taiwan (R.O.C.)
Power Supply	:	Input: 100-240Vac, 1.6A, 50-60Hz Output: 12Vdc, 4.16A, Max. 50W
Data Cable	:	N/A
Description of EUT	:	**Dimensions :** 54 cm (L) X 33 cm (W) X 5.5 cm (H) **Weight :** 6.5 kg **Highest Frequency of the Internal Source :** 27 MHz **Position :** ☒Table-top / ☐Floor-standing **Intended Function :** The EUT is a LCD Monitor. **Product Variant:** The manufacturer declares that the series products are identical to the main test sample. For marketing reason, there are different series numbers. Matrix only takes the responsibility to the test result of the main test sample.

1.2 Test Facility

Conducted Emission, Electrostatic Discharge, Conducted Susceptibility Tests are performed at 2F, No.146, Jian Yi Rd., Chung-Ho District, New Taipei City, Taiwan, R.O.C.
Radiated Emission, Harmonic, Flicker, Radiated Susceptibility, Electrical Fast Transient, Surge, Magnetic Field, Voltage Dips and Interruptions Tests are performed at No. 15-1, Cweishuh Keng, Cweipin Village, Linkou, New Taipei City, Taiwan, R.O.C.

1.3 Test Instruments

Instruments Used for Emission Measurement

Instrument	Manufacturer	Model	Serial No.	Calibration Date	Application
L.I.S.N.	Mess Tec	NNB-2/16Z	03/1006	2018-07-26	Conducted Disturbance Voltage
L.I.S.N.	EMCIS	LN2-16	LN04023	2019-04-23	
RF Cable	HARBOUR	RG 400	1.5m	2018-07-16	
EMI Receiver	R&S	ESCI	100615	2018-07-26	
RF Current Probe	FCC	F-33-4	53	2019-05-16	Conducted Disturbance at Telecommunication Port
ISN	TESEQ	ISN T800	30838	2018-07-27	
CVP	SCHWARZBECK	9222B	01019	2019-01-09	
Double-Ridged Waveguide Horn	EMCO	3115	9912-5992	2019-05-15	Radiated Disturbance (Above 1GHz)
Preamplifier	Com-Power	PAM-118A	443027	2018-12-27	
Signal Analyer	R & S	FSV 30	101629	2018-12-25	
Microflex Cable	HUBER SUHNER	SUCOFLEX 104	ED077	2019-05-17	
Microflex Cable	HUBER SUHNER	SUCOFLEX 102	ED078	2019-05-17	
Bilog Antenna	Teseq GmbH	CBL6111D	38521	2018-10-03	Radio Disturbance (Below 1GHz)
Pre-Amplifier	Schaffner	CPA9231A	0405	2018-08-24	
EMI Test Receiver	R & S	ESCI	100931	2018-08-09	
RF Cable	MIYAZAKI	8D-FB	HA2-10MSITE	2018-08-24	
EMC Emission Tester	EMC-PARTNER	HAR1000-1P	104808	2019-02-13	Harmonic, Flicker
PS3 Power Supply	EMC-PARTNER	PS3-0223	103497	2019-02-13	

Instruments Used for Immunity Measurement

Instrument	Manufacturer	Model	Serial No.	Calibration Date	Application
ESD Simulator	Noiseken	TC-815R	ESS0868491	2019-04-12	Electrostatic Discharge
ESD Simulator	Noiseken	ESS-2002EX	ESS0868406	2019-04-12	
Antenna	Teseq GmbH	CBL6111D	25769	2019-02-12	Radiated Immunity
Power Amplifier	IFI	CMX50	N/A	2019-02-01	
Signal Generator	R & S	SMB100A	110549	2018-09-21	
CDN	FRANKONIA	CDN M2+M3	A3011037	2019-01-16	Conducted Immunity
C.I. Test System	FRANKONIA	CIT-10/75	102C3208	2019-01-16	
Power Attenuator	FRANKONIA	75-A-FFN-06	0212	2019-01-16	
Antenna	FCC	F-1000-4-8/9/10-L-1M	9953	2019-05-13	Electrostatic Discharge, Fast Transient, Surge, Dips & Interruptions & Magnetic Field Disturbance
Power Generator, Mains Coupler/ Decoupler	Thermo Fisher	EMC Pro PLUS	1507189	2019-05-13	

Note: The instruments listed above are within their calibration period of 1 year.

1.4 Test Methodology

All Emission Tests were performed according to the procedures specified in EN 55032.

All Immunity Tests were performed according to the procedures specified in EN 55024.

1.5 Auxiliary Equipments

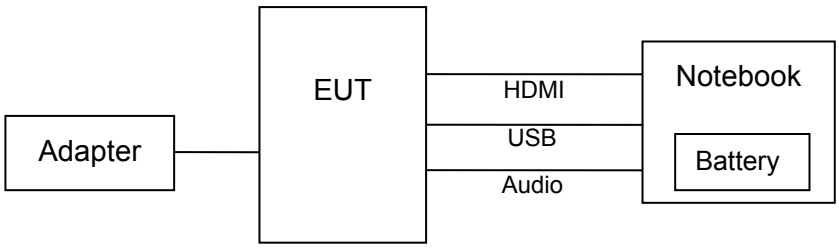
Provided by Matrix Test Lab.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Power Cord
01	NoteBook	X1 Carbon	PF-0QGYKK	CE,FCC, NCC	LENOVO	Adapter to Notebook Unshielded*1.95m

Provided by Manufacturer.

No.	Equipment	Model No.	Serial No.	EMC Approved	Brand	Power Cord
01.	HDMI Cable	N/A	N/A	N/A	N/A	Non-shielded, Detachable 1.8m, w/o core
02.	USB Cable	N/A	N/A	N/A	N/A	Non-shielded, Detachable 1.5m, w/o core
03.	Audio Cable	N/A	N/A	N/A	N/A	Non-shielded, Detachable 1m, w/o core
04.	Adapter	DPS-90FBA	N/A	CE	DELTA	Input: 100-240V~/2A-1A 50-60Hz Non-shielded, Detachable 1.4m Output:12V, 7.5A Non-shielded, Un-detachable 1.2m, with core*1

1.6 Block Diagram



1.7 Identifying the Final Test Mode (Worst Case)

1. Operation Mode 1 (HDMI Input)
2. Operation Mode 2 (VGA Input)
3. Operation Mode 3 (DVI Input)

Note:

1. After pre-test, we identified that the Operation Mode 1 (the worst case) was most likely to cause maximum disturbance and most likely to be susceptible to disturbance. Therefore, the Final EMC Assessment was performed for the worst case.
2. Display image: ☒Color bars with moving picture element; ☐Color bars; ☐H Pattern; ☐Typical display.

1.8 Final Test Mode

Operation Mode 1

1.9 Condition of Power Supply

AC 230V; 50Hz

1.10 EUT Configuration

1. Setup the EUT as shown in Sec.1.6 Block Diagram.
2. Turn on the power of all equipments.
3. Activate the selected Final Test Mode.

1.11 Immunity Performance Classification

Class	Class Criterion
A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention.
C	Lost of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the user in accordance with the manufacturer's instructions.

2 Conducted Disturbance Test (at Mains Terminal)

2.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

2.2 Test Arrangement and Procedure

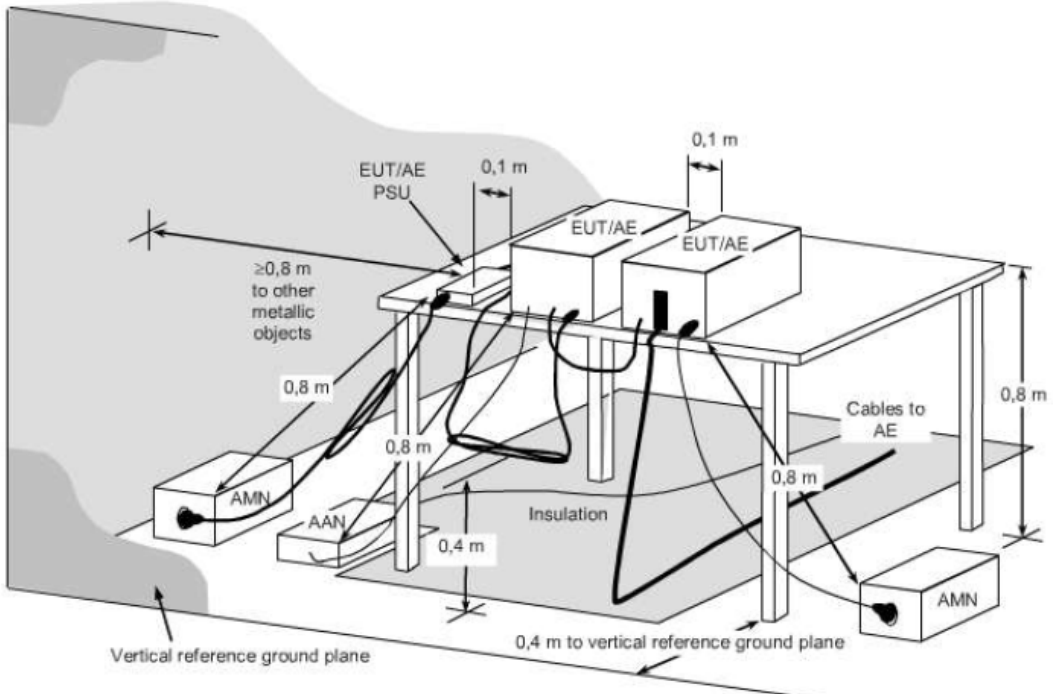


Table-top Equipment

- The EUT was placed on a non-conductive table which was 80 cm above the horizontal coupling plane. The rear of the EUT was 40 cm from the vertical coupling plane.
- The excess interface cables were folded at the cable center into a bundle no longer than 40 cm, so that the bundles were on the table.
- The EUT was connected to the main power through a L.I.S.N. This set up provided 50 ohm / 50 μH coupling impedance for the measuring equipment.
- All auxiliary equipment received power from a second L.I.S.N.
- The conducted emissions were measured between the Line Phase and the PE ground and between the Neutral Phase and the PE ground using an EMI Receiver.
- The values were recorded.

2.3 Test Limit

EN 55032

Frequency (MHz)	☐ Class A		☒ Class B	
	Q.P. (Quasi-Peak)	A.V. (Average)	Q.P. (Quasi-Peak)	A.V. (Average)
0.15 ~ 0.50	79	66	66 to 56	56 to 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30	73	60	60	50

The EMI Receiver bandwidth was set at 9 kHz.

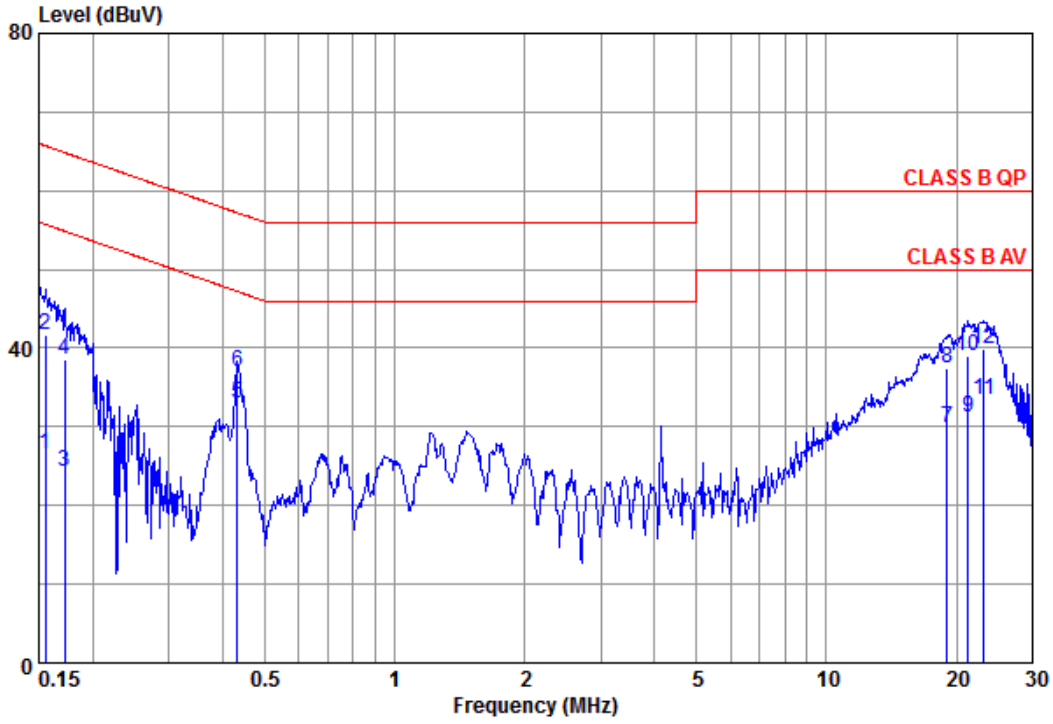
2.4 Test Result

PASS

The final test data are shown on the following page(s)

Conducted Emission Test Data

Test Date	:	2019-06-14	Power Line	:	Line
Temperature	:	24.9℃	Humidity	:	43%



		Freq	Reading	C.F	Result	Limit	Margin	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		0.156	26.42	0.10	26.52	55.69	-29.17	Average
2		0.156	41.50	0.10	41.60	65.69	-24.09	QP
3		0.172	24.20	0.10	24.30	54.86	-30.56	Average
4		0.172	38.55	0.10	38.65	64.86	-26.21	QP
5	*	0.433	32.98	0.09	33.07	47.20	-14.13	Average
6		0.433	36.93	0.09	37.02	57.20	-20.18	QP
7		19.021	29.14	0.71	29.85	50.00	-20.15	Average
8		19.021	36.70	0.71	37.41	60.00	-22.59	QP
9		21.260	30.49	0.80	31.29	50.00	-18.71	Average
10		21.260	38.26	0.80	39.06	60.00	-20.94	QP
11		23.140	32.41	0.91	33.32	50.00	-16.68	Average
12	@	23.140	38.96	0.91	39.87	60.00	-20.13	QP

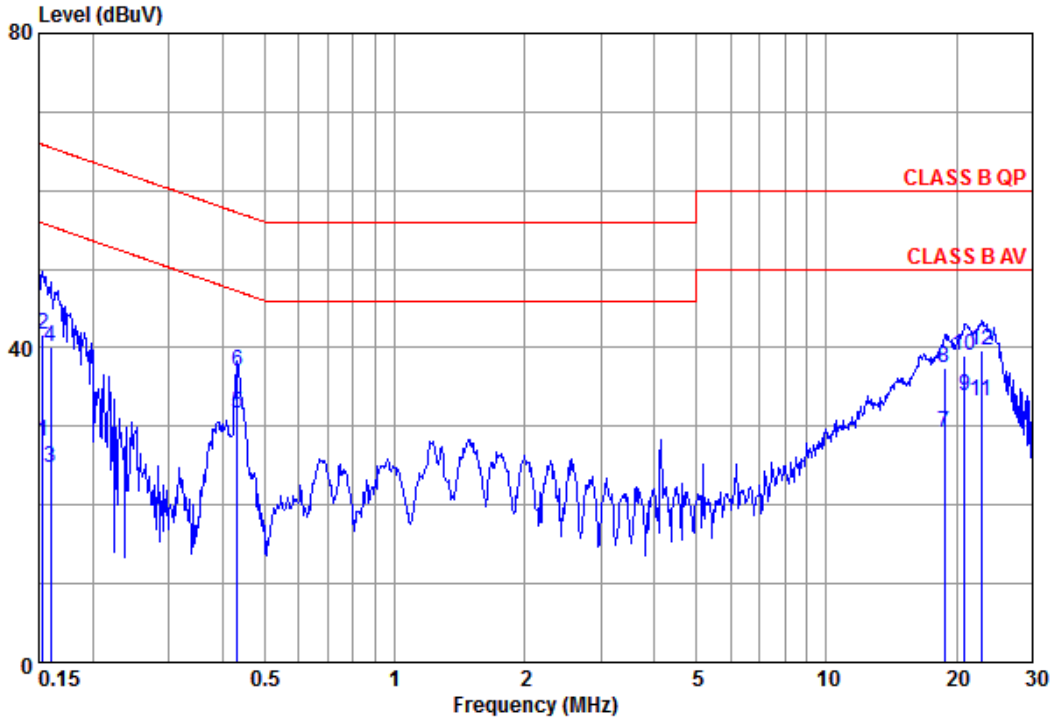
Result = Reading + C.F ; C.F = LISN Factor + Cable Loss

@ :Maximum QP * :Maximum AVG x :Over Limit

Remark：All readings are Quasi-Peak and Average values.

Conducted Emission Test Data

Test Date	:	2019-06-14	Power Line	:	Neutral
Temperature	:	24.9℃	Humidity	:	43%



		Freq	Reading	C.F	Result	Limit	Margin	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		0.153	28.06	0.09	28.15	55.82	-27.67	Average
2		0.153	41.65	0.09	41.74	65.82	-24.08	QP
3		0.160	24.72	0.09	24.81	55.47	-30.66	Average
4		0.160	40.05	0.09	40.14	65.47	-25.33	QP
5	*	0.433	31.54	0.09	31.63	47.20	-15.57	Average
6	@	0.433	36.93	0.09	37.02	57.20	-20.18	QP
7		18.721	28.47	0.64	29.11	50.00	-20.89	Average
8		18.721	36.78	0.64	37.42	60.00	-22.58	QP
9		20.924	33.17	0.72	33.89	50.00	-16.11	Average
10		20.924	38.17	0.72	38.89	60.00	-21.11	QP
11		22.775	32.32	0.82	33.14	50.00	-16.86	Average
12		22.775	38.81	0.82	39.63	60.00	-20.37	QP

Result = Reading + C.F ; C.F = LISN Factor + Cable Loss

@ :Maximum QP * :Maximum AVG x :Over Limit

Remark：All readings are Quasi-Peak and Average values.

3 Radiated Disturbance Test – Below 1 GHz

3.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

3.2 Test Arrangement and Procedure

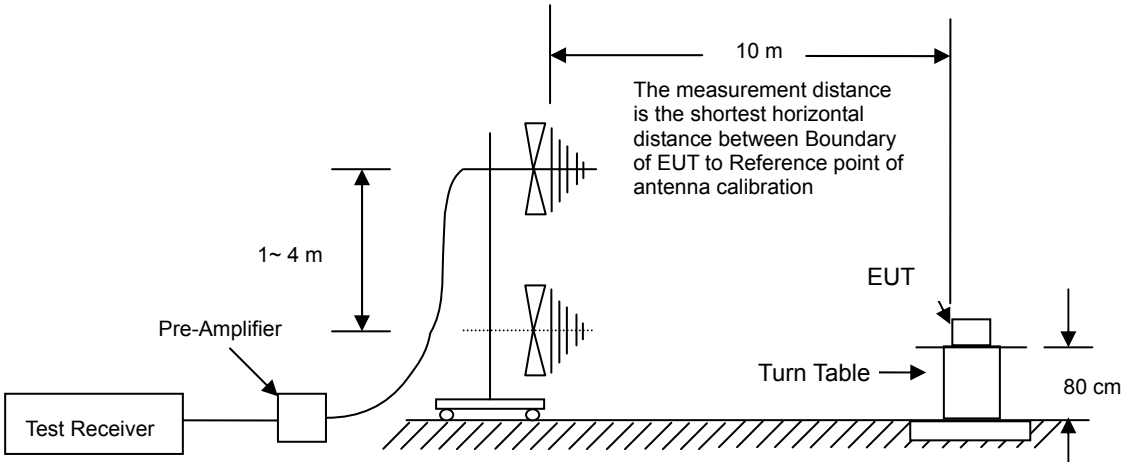


Table-top Equipment

- The EUT was place on a non-conductive turntable which was 80 cm above the horizontal ground plane. The EUT was set 10 m away from the receiving antenna that was mounted on a non-conductive mast.
- Main cables draped to the ground plane and were routed to the mains power outlet. The mains power outlet was bonded to and did not protrude above the ground plane.
- The antenna was adjusted between 1 m and 4 m in height above the ground plane and the Antenna-to-EUT azimuth was also varied during the measurements to find the top 6 maximum meter readings within the frequency range limit as indicated in Sec 3.3.
- The radiated emissions were measured when the Antenna-to-EUT polarization was set horizontally and vertically.
- The values were recorded.

3.3 Test Limit

☒ EN 55032

Frequency (MHz)	☐ Class A	☒ Class B
	Quasi-Peak (dBuV/m)	Quasi-Peak (dBuV/m)
30 ~ 230	40.0	30.0
230 ~ 1000	47.0	37.0

The EMI test receiver bandwidth was set at 120 kHz.

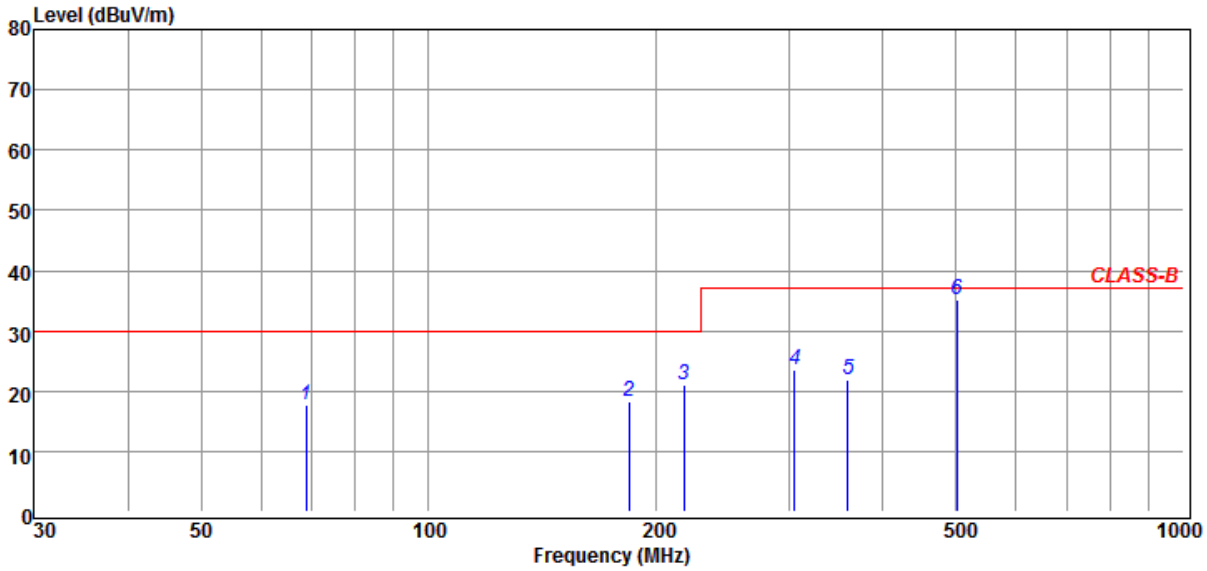
3.4 Test Result

PASS

The final test data are shown on the following page(s).

Radiated Emission Test Data

Test Date	:	2019-05-30	Polarization	:	Horizontal
Temperature	:	28.9℃	Humidity	:	65%

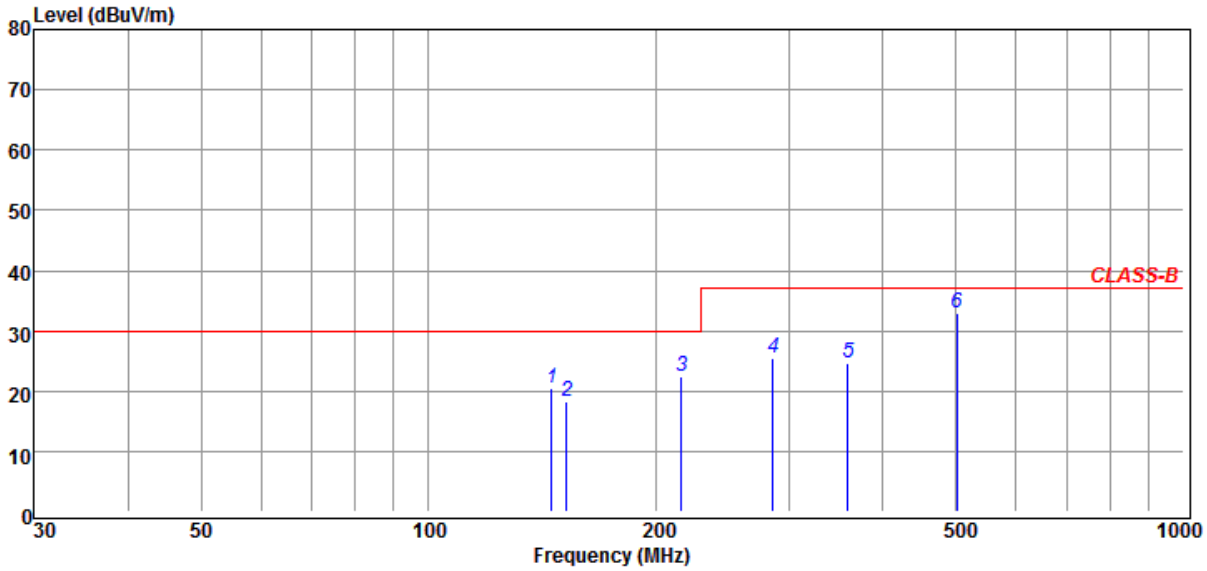


No.	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	cm	deg	Pol.	
1	68.80	44.45	-26.72	17.73	30.00	-12.27	400	16	HORIZONTAL	QP
2	184.23	42.23	-23.93	18.30	30.00	-11.70	400	274	HORIZONTAL	QP
3	218.18	44.48	-23.56	20.92	30.00	-9.08	400	136	HORIZONTAL	QP
4	305.48	42.64	-19.21	23.43	37.00	-13.57	389	24	HORIZONTAL	QP
5	358.83	39.43	-17.63	21.80	37.00	-15.20	385	3	HORIZONTAL	QP
6	501.42	48.89	-13.82	35.07	37.00	-1.93	374	195	HORIZONTAL	QP

Remark：All readings are Quasi-Peak values.

Radiated Emission Test Data

Test Date	:	2019-05-30	Polarization	:	Vertical
Temperature	:	28.9℃	Humidity	:	65%



No.	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Antenna	Remark
	MHz	dBμV	dB	dBμV/m	dBμV/m	dB	cm	deg	Pol.	
1	145.43	42.02	-21.56	20.46	30.00	-9.54	100	45	VERTICAL	QP
2	152.22	40.17	-21.86	18.31	30.00	-11.69	100	215	VERTICAL	QP
3	216.24	46.09	-23.71	22.38	30.00	-7.62	100	91	VERTICAL	QP
4	286.08	45.00	-19.50	25.50	37.00	-11.50	103	78	VERTICAL	QP
5	358.83	42.34	-17.63	24.71	37.00	-12.29	105	6	VERTICAL	QP
6	501.42	46.69	-13.82	32.87	37.00	-4.13	110	187	VERTICAL	QP

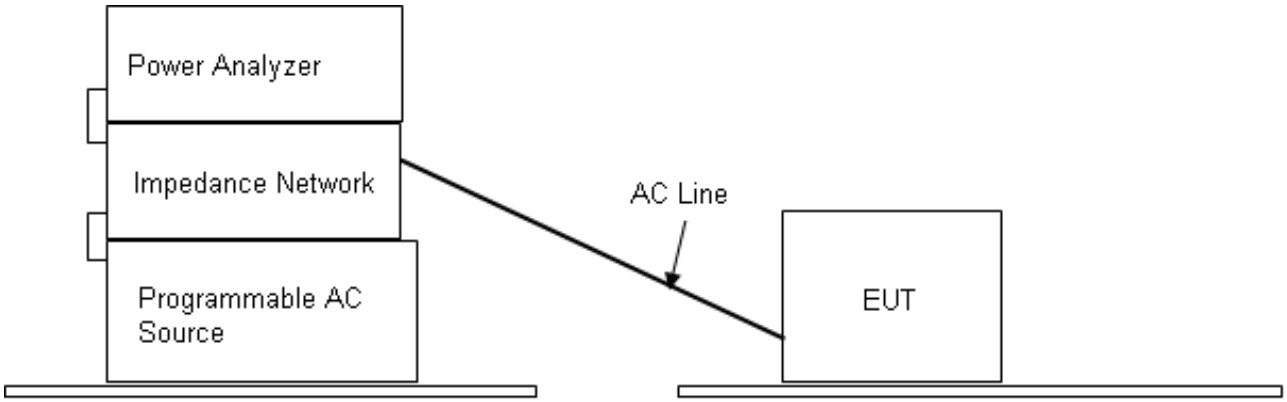
Remark：All readings are Quasi-Peak values.

4 Harmonic Current Emission Measurement

4.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

4.2 Test Configuration and Procedure



- The EUT was set in series with the Power Analyzer through an Impedance Network for the measurement of harmonic currents.
- The supply voltage and frequency setting on the Programmable AC Source was programmed as the rated voltage and frequency of the EUT.
- Classify the EUT class in accordance with the IEC61000-3-2 for the purpose of harmonic current limitation. The measurement was automatically performed by test software. The test result was collected and analyzed by the computer.

4.3 EUT Operation Condition

Environment Condition

Temperature	Humidity	Atmospheric Pressure
25.1℃	42%RH	1009mbar

4.4 Test Limit

Class A Equipment

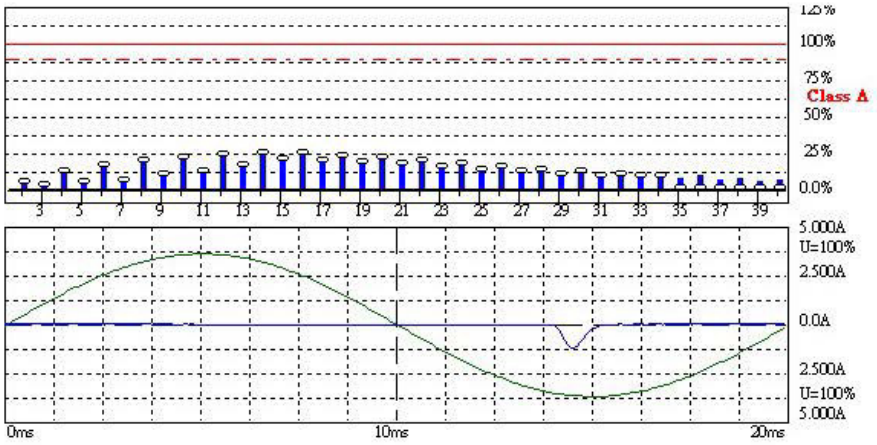
Harmonic Order (n)	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33

13	0.21
15 ≤ n ≤ 39	0.15 * 15 / n
Even harmonics	
2	1.08
4	0.43
6	0.30
8 ≤ n ≤ 40	0.23 * 8 / n

4.5 Test Result

PASS

The measured result is shown on the following page(s).



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2) 2019/5/30 下午 02:54

Urms =	229.5	V	P =	12.39	W	THC =	0.172	A	Range: 5 A
Irms =	0.183	A	pf =	0.295					V-nom: 234 V
									TestTime: 10 min (100%)

Test completed, Result: PASSED

```
Urms =  229.5V  Freq =  50.000  Range:  5 A
Irms =  0.183A  Ipk  =  1.230A  cf    =  6.720
P    =  12.39W  S    =  42.03VA pf    =  0.295
THDi =  281 %   THDu =  0.20 %  Class A

Test - Time :   10min    ( 100 %)

Test completed, Result: PASSED
```

Order	Freq. [Hz]	Iavg [A]	Irms [A]	Imax [A]	Limit [A]	Status
1	50	0.0615	0.0613	0.0616		
2	100	0.0498	0.0497	0.0500	1.0800	
3	150	0.0494	0.0494	0.0494	2.3000	
4	200	0.0492	0.0491	0.0494	0.4300	
5	250	0.0484	0.0485	0.0485	1.1400	
6	300	0.0467	0.0467	0.0470	0.3000	
7	350	0.0458	0.0458	0.0461	0.7700	
8	400	0.0439	0.0439	0.0443	0.2300	
9	450	0.0418	0.0418	0.0418	0.4000	
10	500	0.0403	0.0403	0.0403	0.1840	
11	550	0.0382	0.0381	0.0385	0.3300	
12	600	0.0363	0.0363	0.0363	0.1533	
13	650	0.0342	0.0342	0.0342	0.2100	
14	700	0.0321	0.0323	0.0323	0.1314	
15	750	0.0299	0.0299	0.0299	0.1500	
16	800	0.0278	0.0278	0.0278	0.1150	
17	850	0.0256	0.0256	0.0256	0.1324	
18	900	0.0235	0.0235	0.0235	0.1022	
19	950	0.0214	0.0214	0.0214	0.1184	
20	1000	0.0195	0.0195	0.0195	0.0920	
21	1050	0.0178	0.0180	0.0180	0.1071	
22	1100	0.0162	0.0162	0.0162	0.0836	
23	1150	0.0146	0.0146	0.0146	0.0978	
24	1200	0.0131	0.0131	0.0134	0.0767	
25	1250	0.0119	0.0119	0.0119	0.0900	
26	1300	0.0107	0.0107	0.0107	0.0708	
27	1350	0.0097	0.0098	0.0098	0.0833	
28	1400	0.0086	0.0089	0.0089	0.0657	
29	1450	0.0079	0.0079	0.0079	0.0776	
30	1500	0.0072	0.0073	0.0073	0.0613	
31	1550	0.0064	0.0067	0.0067	0.0726	
32	1600	0.0058	0.0058	0.0061	0.0575	
33	1650	0.0053	0.0055	0.0055	0.0682	
34	1700	0.0049	0.0052	0.0052	0.0541	
35	1750	0.0000	0.0046	0.0046	0.0643	
36	1800	0.0000	0.0040	0.0043	0.0511	
37	1850	0.0000	0.0034	0.0037	0.0608	
38	1900	0.0000	0.0031	0.0034	0.0484	
39	1950	0.0000	0.0027	0.0027	0.0577	
40	2000	0.0000	0.0024	0.0027	0.0460	

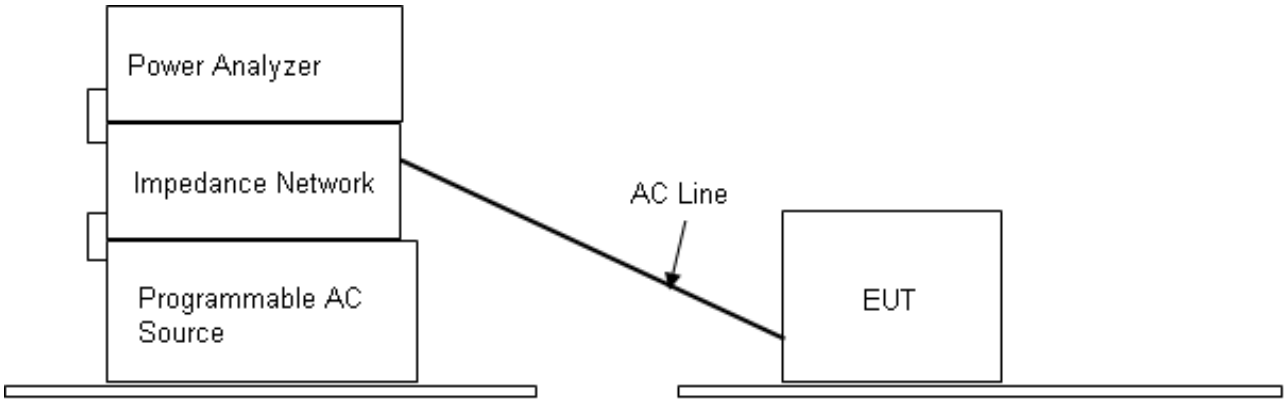
Note: The EUT power level is below 75watts therefore has no defined limits.

5 Voltage Fluctuations and Flicker Measurement

5.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

5.2 Test Configuration and Procedure



- The EUT was set in series with the Power Analyzer through an Impedance Network for the measurement of Flicker Voltage.
- The supply voltage and frequency setting on the Programmable AC Source was programmed as the rated voltage and frequency of the EUT.
- The measurement was automatically performed by test software. The test result was collected and analyzed by the computer.

5.3 EUT Operation Condition

Environment Condition

Temperature	Humidity	Atmospheric Pressure
25℃	44%RH	1009mbar

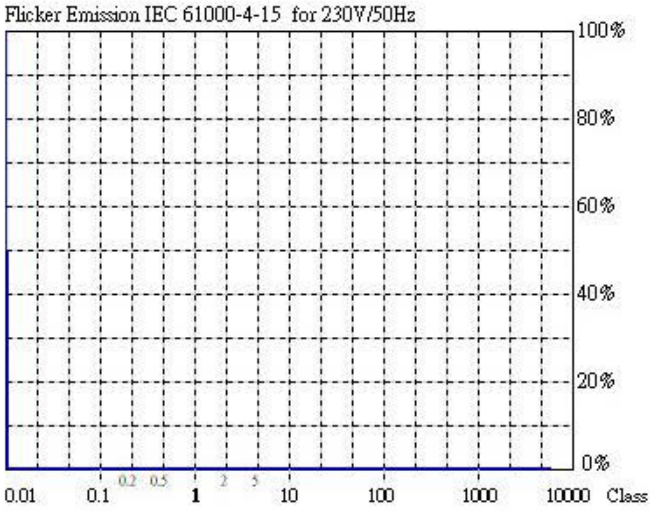
5.4 Test Limit

Test Item	Limit	Remark
P_{st}	1.0	P_{st} means short-term flicker indicator. T_p=10 min
P_{lt}	0.65	P_{lt} means long-term flicker indicator. T_p=2 hrs
d_t (%)	3.3	For more than 500ms
d_{max} (%)	4	d_{max} means relative maximum voltage change.
d_c (%)	3.3	d_c means relative steady-state voltage change.

5.5 Test Result

PASS

The measured result is shown on the following page(s).



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.01%**
Limit (dc):	3.00%
Tmax 3.00% (dt):	**0.00ms**
Limit (dt>Lim):	200ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3

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Urms =	229.5	V	P =	12.52	W
Irms =	0.164	A	pf =	0.333	

Range:	5 A
V-nom:	234 V
TestTime:	10 min (100%)

Test completed, Result: PASSED

```
Urms =  229.5V  Freq =  50.000  Range:  5 A
Irms =  0.164A  Ipk  =  0.952A  cf    =  5.821
P    =  12.52W  S    =  37.54VA pf    =  0.333

Test - Time :   1 x10min = 10min ( 100 %)

LIN (Line Impedance Network) :   L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits :        Plt  :  0.65    Pst   : 1.00
                dmax :  4.00 %  dc    : 3.00 %
                dtLim:  3.00 %  dt>Lim: 200ms

Test completed, Result: PASSED

Plt  =  0.072

        Pst     dmax    dc      dt>Lim
                [%]     [%]     [ms]
1       0.072   0.000   0.010   0.000
```

6 Electrostatic Discharge Immunity Test

6.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

6.2 Test Configuration and Procedure

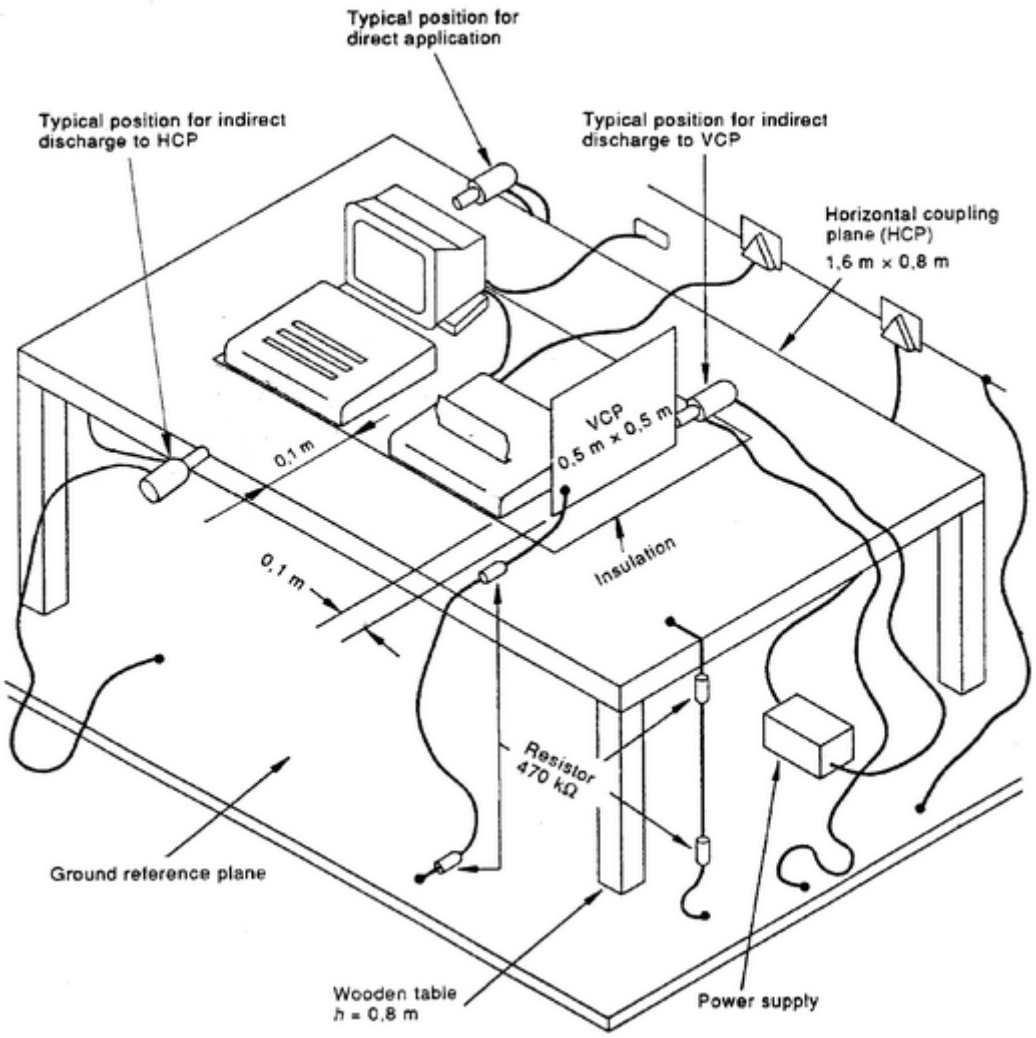


Table-top Equipment

- The EUT was located on a 0.8 m high wooden table standing on the ground reference plane with a 1.6 * 0.8 m horizontal coupling plane on the top. The EUT and cables was isolated from the coupling plane by an insulating support 0.5 mm thick.
- In Contact Discharge, the EUT was exposed to minimum 200 discharges, 100 each at negative and positive polarity on the selected test points (the selected test points were marked with red labels on the EUT)
- In Air Discharge, the EUT exposed to minimum of 10 single discharges on the selected test points.
- The result was observed and analyzed.

6.3 Test Result

6.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
24.7℃	45%RH	1006mbar

6.3.2 Observation of Direct Discharge

Test Points: 1. Surface of Case. 2. Junction of Case. 3. Screws. 4. HDMI Jack. 5. USB Jack. 6. DVI Jack. 7. VGA Jack. 8. AUX Jacks. 9. DC Power Jack. 10. Button.

Type of Discharge	Test Specifications				Performance Required by EN55024	Observed Result	Verdict
	Test Level	Polarity	Test Point	Number of Discharge			
Air Discharge	2,4,8 (kV)	±	1~10	20/ per point	B	A	Pass
Contact Discharge	4 (kV)	±	1~7	50/ per point	B	A	Pass
Remarks: 1. No temporary degradation or loss of function has been observed throughout the entire time interval of air discharge. 2. No temporary degradation or loss of function has been observed throughout the entire time interval of contact discharge.							

The Performance Requirement Class Criterion is defined in Sec. 1.11.

6.3.3 Observation of Indirect Discharge

Test Points: 1. Front Side. 2. Rear Side. 3. Left Side. 4. Right Side.

Type of Discharge	Test Specifications				Performance Required by EN55024	Observed Result	Verdict
	Test Level	Polarity	Test Point	Number of Discharge			
HCP Application	4 (kV)	±	1~4	50/ per point	B	A	Pass
VCP Application	4 (kV)	±	1~4	50/ per point	B	A	Pass
Remarks: 1. No temporary degradation or loss of function has been observed throughout the entire time interval of HCP application. 2. No temporary degradation or loss of function has been observed throughout the entire time interval of VCP application.							

The Performance Requirement Class Criterion is defined in Sec. 1.11.

PASS

The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

7 Radio-frequency, Electromagnetic Field Immunity Test

7.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

7.2 Test Configuration and Procedure

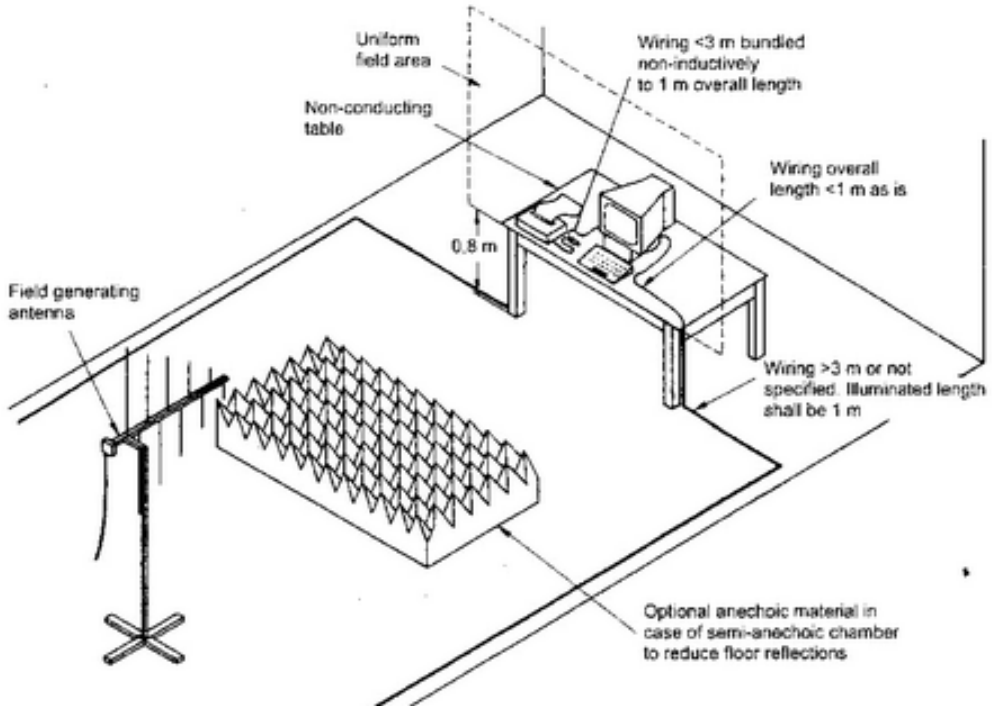


Table-top Equipment

- The field calibration was executed to create a uniform field area (UFA), 3 m away from the antenna, to ensure the validity of the test results.
- The EUT was placed on a non-conductive table 0.8 m high in the UFA.
- The EUT was then connected to power and signal wires according to relevant installation instruction.
- The EUT was positioned so that the four sides of the EUT were exposed to the electromagnetic field in sequence. In each position, the performance of the EUT was investigated and monitored by a CCD camera..

7.3 Test Result

7.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
23.7℃	40％RH	1009mbar

7.3.2 Observation of Test

Type of Modulation	Test Specifications			Performance Required by EN55024	Observed Result	Verdict
	Field Strength	Frequency Range	Modulation			
Amplitude Modulation	3V/m	80 to 1000MHz	80%, 1KHz, sinusoidal	A	A	Pass
Remark:	No temporary degradation or loss of function has been observed throughout the entire test.					

The Performance Requirement Class Criterion is defined in Sec. 1.11.

PASS

The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

8 Electrical Fast Transient Test

8.1 Test Instrument

Refer to Sec. 1.3 Test Instruments.

8.2 Test Configuration and Procedure

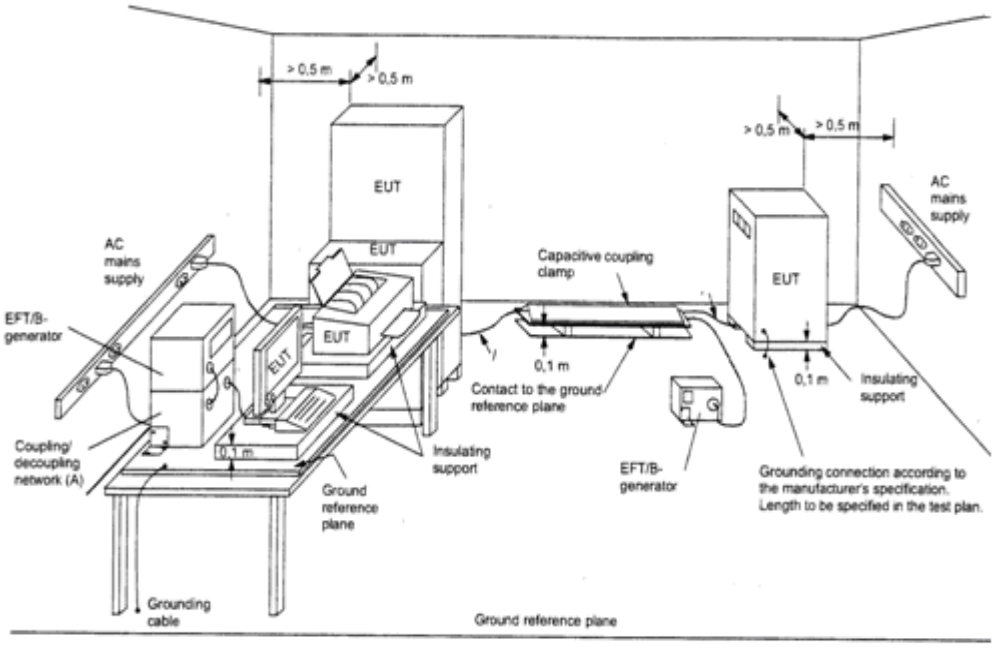


Table-top Equipment

- The EUT was placed on a table of 0.8 m height above the 1 * 1 m metallic ground reference plane, which projected beyond the EUT by at least 0.1 m on all sides.
- The ground plane was connected to the protective earth.
- The distance between the EUT and all other conductive structures, except the ground plane beneath the EUT was more than 0.5 m.
- The length of the signal and power lies between the coupling device and the EUT was 0.5 m.
- All cables to the EUT were placed on the insulation support 0.1 m above the ground reference plane.
- The EUT was connected to the power mains through a coupling device that directly coupled the EFT interference signal. Each of the Line, Neutral and Protective Earth conductors was injected with burst for 1 minute. The test time was broken down into six 10 s bursts separated by a 10 s pause for avoiding synchronization. Both voltage polarities were applied for each test level.
- Operating condition was shown on the monitor and observed.

8.3 Test Result

8.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
24℃	39%RH	1009mbar

8.3.2 Observation of Power Supply Port

Coupling Selection	Test Specifications				Performance Required by EN 55024	Observed Result	Verdict
	Voltage (kV)	Test Duration (Sec)	Repetition Rate (kHz)	Tr/ Td (nS)			
L	±1	60	5	5/50	B	A	Pass
N	±1	60	5	5/50	B	A	Pass
PE	±1	60	5	5/50	B	A	Pass
L + N	±1	60	5	5/50	B	A	Pass
L + PE	±1	60	5	5/50	B	A	Pass
N + PE	±1	60	5	5/50	B	A	Pass
L + N +PE	±1	60	5	5/50	B	A	Pass
Remark:	No temporary degradation or loss of function has been observed throughout the entire test.						

The Performance Requirement Class Criterion is defined in Sec. 1.11.

8.3.3 Observation of I/O, communication ports (Applicable only to cable length >3m)

There was no I/O and communication cable longer than 3 meter; therefore, no test has been required.

PASS

The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

9 Surge Immunity Test

9.1 Test Instrument

Refer to Sec. 1.3 Test Instruments.

9.2 Test Configuration and Procedure

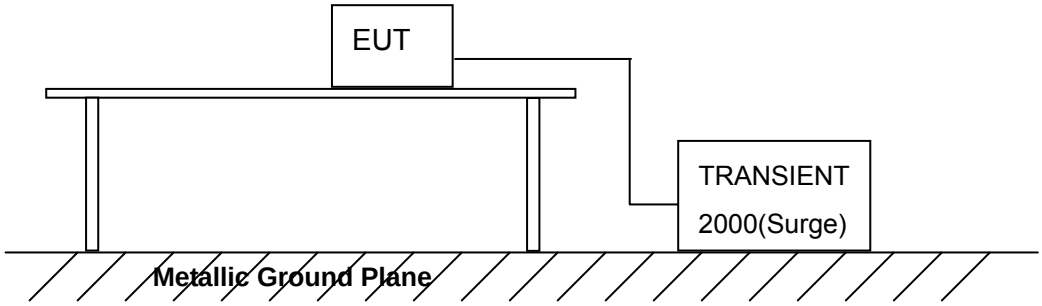


Table-top Equipment

- The EUT was placed on a table of 0.8 m height above the 1 * 1 m metallic ground reference plane, which projected beyond the EUT by at least 0.1 m on all sides.
- The ground plane was connected to the protective earth.
- The length of power cord between the coupling device and the EUT is less than 2 m (provided by the manufacturer).
- The EUT was connected to the power mains through a coupling device that directly couples the Surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).
- The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.
- Operating condition was shown on the monitor and observed.

9.3 Test Result

9.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
23.7℃	37％RH	1009mbar

9.3.2 Observation of Power Supply Port

Coupling Selection	Test Specifications			Performance Required by EN 55024	Observed Result	Verdict
	Voltage (kV)	Min. of Surge at Each Polarity	Repetition Rate (per min)			
L ►N	±0.5, 1	5	1	B	A	Pass
L ►PE	±0.5, 1,2	5	1	B	A	Pass
N ►PE	±0.5, 1,2	5	1	B	A	Pass
Remark:	No temporary degradation or loss of function has been observed throughout the entire test.					
Note	Phase Shifting:0º,90º,180º,270º,360º					

The Performance Requirement Class Criterion is defined in Sec. 1.11.

9.3.3 Observation of other supply/ signal lines: (Applicable only to ports which according to the manufacturer's specification may connect directly to outdoor cables)

N/A

PASS

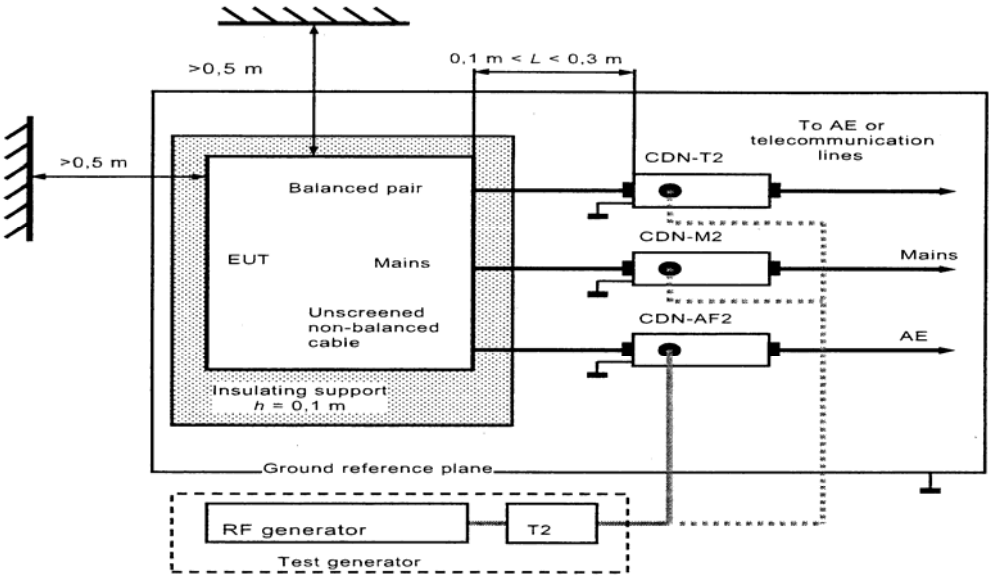
The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

10 Radio-frequency, Conducted Disturbances Immunity Test

10.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

10.2 Test Configuration and Procedure



- The EUT was placed on an insulating support of 0.1 m height above a ground reference plane. All cables exiting the EUT was supported at a height of 30 mm above the ground reference plane.
- The EUT was connected to the power mains through a Coupling and Decoupling Networks (CDN).
- The CDN was located 0.3 m from the EUT as indicated in the diagram above.
- The test was performed with the test generator connected to each of the CDN in turn while the other non-excited RF input ports of the coupling devices were terminated by a 50 Ω terminator.
- The conducted disturbance was applied on the EUT from 150 kHz to 80 MHz using the signal levels established during the setting process. .
- Operating condition was shown on the monitor and observed.

10.3 Test Result

10.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
24.3℃	44％RH	1006mbar

10.3.2 Observation of Test

Type of Modulation	Test Specifications			Performance Required by EN 55024	Observed Result	Verdict
	Voltage Level (emf) U_0	Frequency Range	Modulation			
Amplitude Modulation	3V/ 130dBμV	0.15 to 80MHz	80%, 1kHz, sinusoidal	A	A	Pass
Remark:	No temporary degradation or loss of function has been observed throughout the entire test.					

The Performance Requirement Class Criterion is defined in Sec. 1.11.

10.3.3 Observation of I/O, communication ports (Applicable only to cable length >3m)

There was no I/O and communication cable longer than 3 meter; therefore, no test has been required.

PASS

The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

11 Power Frequency Magnetic Field Immunity Test

11.1 Test Instruments

Refer to Sec. 1.3 Test Instruments.

11.2 Test Configuration and Procedure

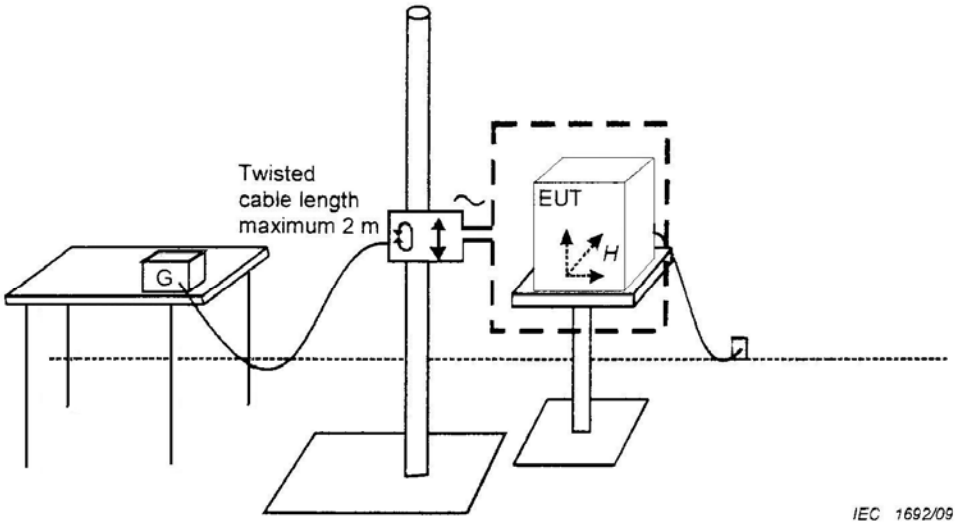


Table-top Equipment

- The EUT was placed on a non-magnetic metal ground plane of 0.25 mm thickness with the interposition of a 0.1 m thickness insulating support. The ground plane was connected to the protected earth.
- The EUT was placed at the center of the 1 * 1 m induction coil with the test generator placed within 3 m distance.
- The test was operated by moving and shifting the induction coil to expose to the test field.
- The operation condition was observed and analyzed.
- The induction coil was then rotated by 90° to expose the EUT to the test field with different orientations and the same procedure.

11.3 Test Result

11.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
23.6℃	42%RH	1009mbar

11.3.2 Observation of Test

Level (A/m)	Frequency (Hz)	Performance Required by EN55024	Observed Result	Verdict
1	50	A	A	Pass
Remark:	No temporary degradation or loss of function has been observed throughout the entire test.			

The Performance Requirement Class Criterion is defined in Sec. 1.11.

PASS

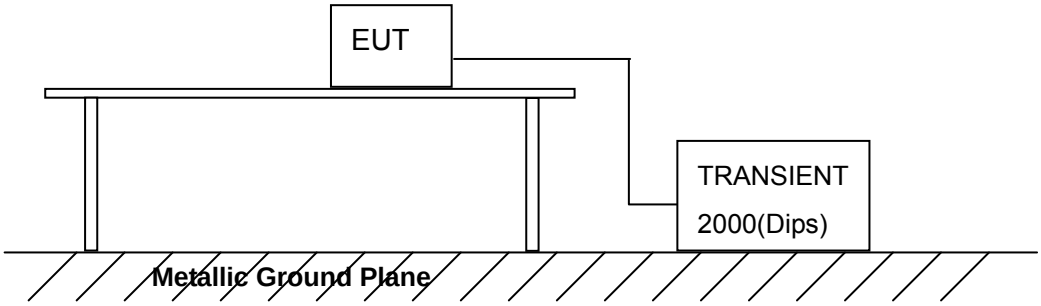
The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

12 Voltage Dips, Short Interruptions Immunity Test

12.1 Test Instrument

Refer to Sec. 1.3 Test Instruments.

12.2 Test Configuration and Procedure



- The EUT was tested with (Ⅰ) >95% voltage dip of supplied voltage with a duration of 10 ms (Ⅱ) 30% voltage dip of supplied voltage with duration 500 ms (Ⅲ) A 95% voltage interruption of supplied voltage with duration of 5000 ms,
- For each selected combination of test level and duration with a sequence of three dips / interruptions with intervals of 10 s.
- For Voltage Dips, changes in supply voltage occurred at zero crossings of the voltage.
- For Short Interruptions, changes in supply voltage also occurred at zero crossings of the voltage.
- The performance of the EUT was monitored and recorded.

12.3 Test Result

12.3.1 Environment Condition

Temperature	Humidity	Atmospheric Pressure
24.1℃	38%RH	1009mbar

12.3.2 Observation of Power Supply Port

Voltage Dips

Voltage Reduction (%)	Test Specifications			Performance Required by EN 55024	Observed Result	Verdict
	Duration Periods (Cycle)	No. of Reductions	Interval between Each Reduction (sec.)			
>95	0.5	3	≥ 10	B	A	Pass
30	25	3	≥ 10	C	A	Pass
Remarks:	No temporary degradation or loss of function has been observed throughout the entire test.					
Note	Phase Shifting:0º,180º, 360º					

Voltage Interruptions

Voltage Reduction (%)	Test Specifications			Performance Required by EN 55024	Observed Result	Verdict
	Duration Periods (Cycle)	No. of Reductions	Interval between Each Reduction (sec.)			
>95	250	3	≥ 10	C	C	Pass
Remark:	When testing Voltage Dip with residual voltage 4% of normal power supply, the EUT shut down automatically. After testing, the EUT required operator intervention to recover its function.					
Note	Phase Shifting:0º,180º, 360º					

The Performance Requirement Class Criterion is defined in Sec. 1.11.

PASS

The test result shows that the EUT is in compliance with the test performance criteria specified in EN 55024.

13 Photographs of Test

13.1 Conducted Disturbance Test(at Mains Terminals)

Front View

Rear View

13.2 Radiated Disturbance Test – Below 1 GHz

Front View

Rear View

13.3 Harmonic Current & Voltage Fluctuations and Flicker Measurement

13.4 Electrostatic Discharge Immunity Test

13.5 Radio-frequency, Electromagnetic Field Immunity Test

13.6 Electrical Fast Transient / Burst Immunity Test

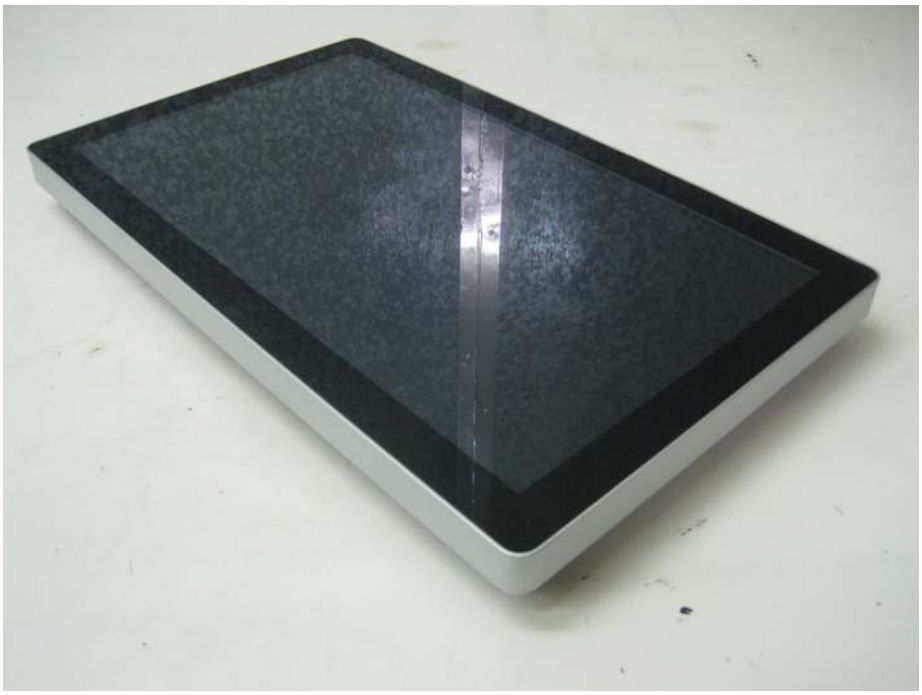
13.7 Surge Immunity Test

13.8 Radio-frequency, Conducted Disturbances Immunity Test

13.9 Power Frequency Magnetic Field Immunity Test

13.10 Voltage Dips, Short Interruptions Immunity Test

14 Photographs of EUT

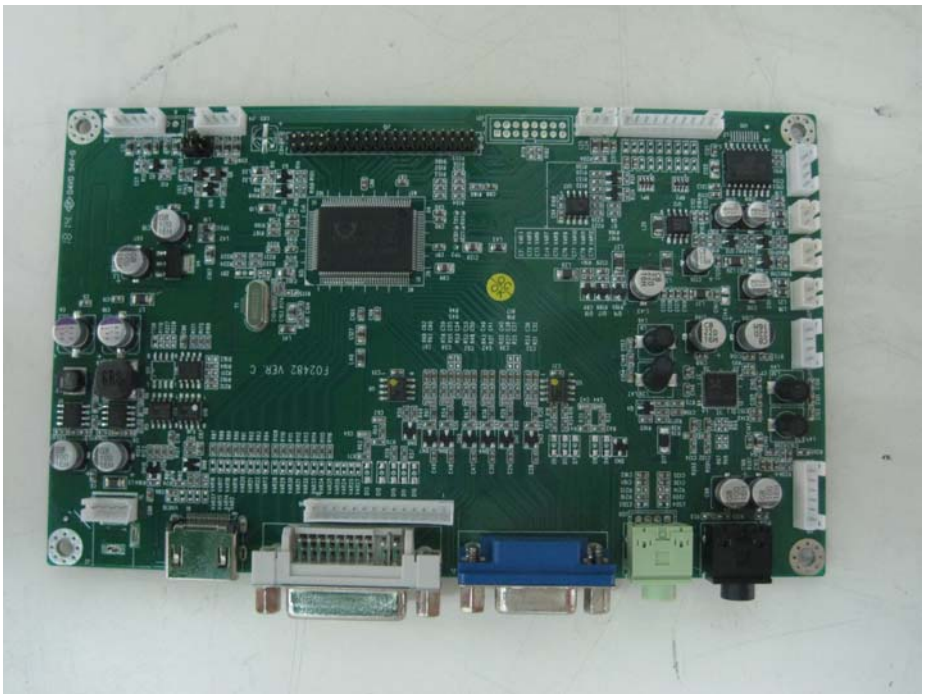


Front View of the EUT

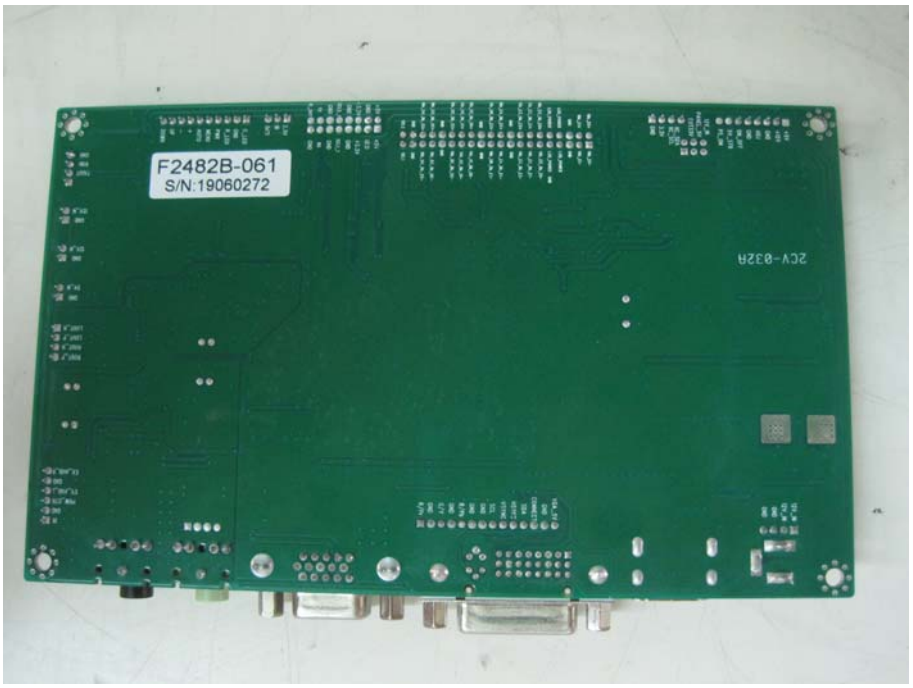
Rear View of the EUT

Inside View of the EUT

Inside View of the EUT



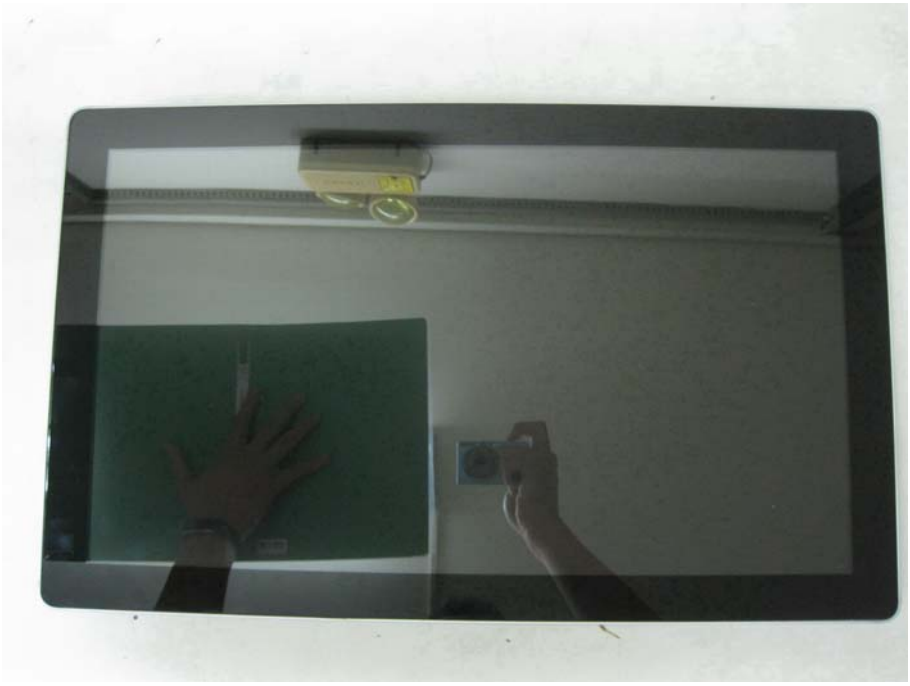
Front View of the PCB 1



Rear View of the PCB 1

Front View of the PCB 2

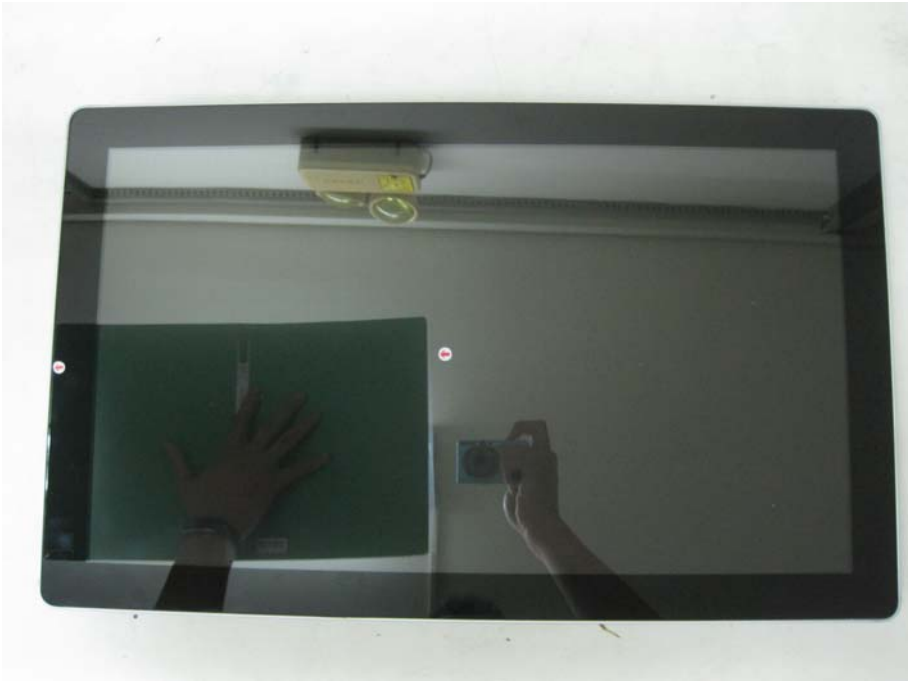
Rear View of the PCB 2



Front View of the Panel

Rear View of the Panel

15 Photographs of ESD Test Points

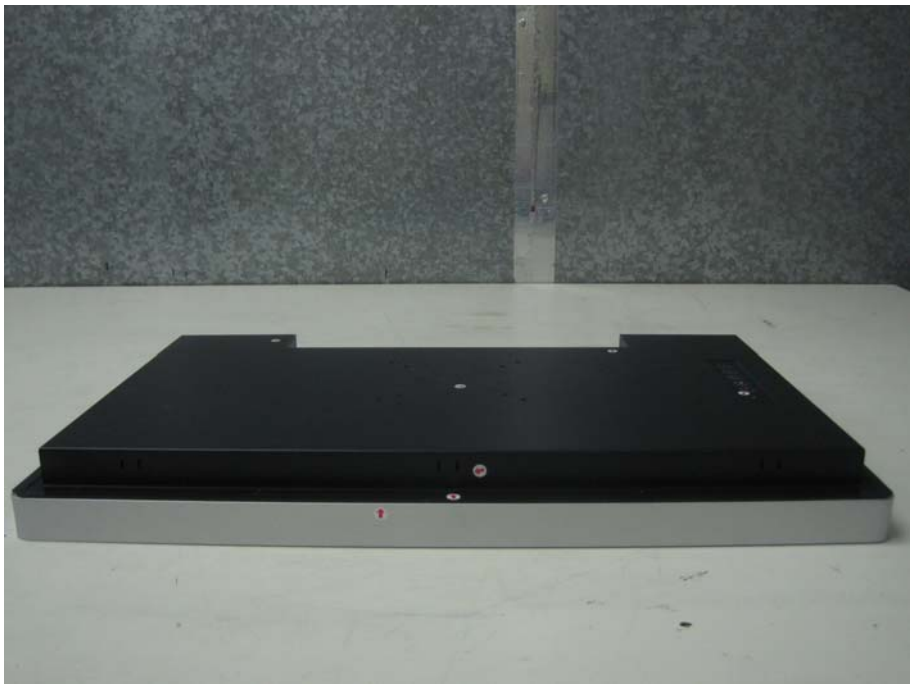


View of ESD Test Points

View of ESD Test Points

View of ESD Test Points

View of ESD Test Points



View of ESD Test Points

View of ESD Test Points