EMC TEST REPORT

Applicant:	
Address of Applicant:	
Manufacturer:	
Address of Manufacturer:	
Product name:	AC Adapter
Model:	NLBxxxyyyW1z4Sa(xxx=010-200 indicates rated output current range 0.1-2.0A, yyy=045-240 indicates rated output voltage range 4.5-24VDC, z=A, U, C, E, K, S, J indicates different version of plug on, Sa=S95 or S65 or S35 or S47 or S58, indicates Product implementation standard)
Rating(s):	100-240V～, 50/60Hz, 0.4A Max
Trademark:	Nalin
Standards:	EN 55015:2013, EN 61547:2009, EN 61000-3-2:2014, EN 61000-3-3:2013
Date of Receipt:	2016-03-07
Date of Test:	2016-03-07~2016-04-07
Date of Issue:	2016-04-11
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:

Apr.11, 2016 Eleven Liang Project Engineer

Date *Name/Position* *Signature*

Reviewed by:

Apr.11, 2016 Pauler Li Project Manager

Date *Name/Position* *Signature*

Testing Laboratory information:	
Testing Laboratory Name ..... :	GuangZhou ITL Co., Ltd
Address ..... :	1-2/F., South Block, Building A2, No.3, Keyan Road, Science City, Guangzhou High-Tech Industrial Development Zone, Guangdong, China
Testing location ..... :	Same as above
Tel..... :	0086-20-32209330
Fax ..... :	0086-20-62824387
E-mail ..... :	itl@i-testlab.com

Possible test case verdicts:

- test case does not apply to the test object.. : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement . : F (Fail)

General remarks:

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

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

NLBxxxyyyW1z4Sa(xxx=010-200 indicates rated output current range 0.1-2.0A, yyy=045-240 indicates rated output voltage range 4.5-24VDC, z=A, U, C, E, K, S, J indicates different version of plug on, A indicates America, U indicates Europe, C indicates China, E indicates England, K indicates Korea, S indicates Australia, J indicates Japan, I indicates Argentina, B indicates Brazil, Sa=S95 or S65 or S35 or S47 or S58, indicates Product implementation standard)

All the models are identical to each other except for the model designations, plug type and output rated.

All tests were performed on the models NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47 as representative.

Test Summary:

The following standards have been applied to ensure the product conforms with the protection requirements of the council directive 2014/30/EU.

Electromagnetic Interference (EMI)				
Test Item	**Test Standard**	**Test Method**	**Class / Severity**	**Result**
Conducted Emission on AC, (9kHz to 30MHz)	EN 55015:2013	EN 55015:2013	Table 2a	PASS
Radiated Electromagnetic Disturbance (9 kHz to 30 MHz)	EN 55015:2013	EN 55015:2013	Table 3a	PASS
Radiated Emission (30 to 300MHz)	EN 55015:2013	EN 55015:2013	Table 3b	PASS
Harmonic Emission on AC, 50 Hz	EN 61000-3-2:2014	EN 61000-3-2:2014	Clause 7 of EN 61000-3-2	PASS
Voltage fluctuation and flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	PASS
Electromagnetic Immunity (EMS)				

Test Item	Test Standard	Test Method	Test Level	Result
Electrostatic Discharge Immunity (ESD)	EN 61547:2009	EN 61000-4-2:2009	Contact: ±4 kV Air: ±8 kV	PASS
Radiated Immunity, (80MHz to 1 GHz)	EN 61547:2009	EN 61000-4-3:2006 +A1: 2008+A2 :2010	3 V/m, 80% 1kHz, A.M.	PASS
Electrical Fast Transient (EFT) on AC	EN 61547:2009	EN 61000-4-4:2012	AC ±1.0 kV	PASS
Surge immunity on AC	EN 61547:2009	EN 61000-4-5: 2014	±0.5 kV, D.M ±1.0 kV, C.M.(≤ 25W) ±1.0 kV, D.M ±2.0 kV, C.M.(> 25W)	PASS
Injected Currents on AC, (150kHz to 80MHz)	EN 61547:2009	EN 61000-4-6: 2014	3 Vrms (emf), 80%, 1kHz, Amp. Mod.	PASS
Voltage dips and interruptions on AC	EN 61547:2009	EN 61000-4-11: 2004	0%U_T * for 0.5 per 70%U_T * for 10 per	PASS

Test Location

All the tests were performed in GuangZhou ITL Co., Ltd. Which is located at 1-2/F., South Block, Building A2, No.3, Keyan Road, Science City, Guangzhou High-Tech Industrial Development Zone, Guangdong, China

Tel: 0086-20-32209330, Fax: 0086-20-62824387

No test is subcontracted

TABLE OF CONTENTS

Section 1 General Information and Equipment Used

1.1 Client Information

Applicant:

Address of Applicant:

1.2 EUT General and Technical Descriptions

EUT Name:	AC Adapter
EUT Model:	NLB200045W1U4S47, NLB070216W1U4S47, NLB063240W1U4S47
EUT Trademark:	Nalin
Input Voltage:	100-240V ~
Frequency:	50/60Hz
Input Power/Current:	0.4A
Output rated:	4.5Vdc, 2.0A(For NLB200045W1U4S47) 21.6Vdc, 0.7A(For NLB070216W1U4S47) 24Vdc, 0.63A(NLB063240W1U4S47)
Power Cable Description:	/
Other Cables Description:	/
I/O Ports:	/
Function(s) Description:	/
Accessories information:	/

1.3 Support Equipment(s) and Test Configuration

1.3.1 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state
Resistor Load	/	/	/	Normal

1.3.2 Working State of EUT

Power Supply of EUT: 230V~ 50Hz

EUT Status: Full load working and Half load working.

1.3.3 Block Diagram of Test Configuration

/

1.4 Equipment Used during Test

Conducted Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-102	EMI Test receiver	R&S	ESCI	100910	2015/06/23	2016/06/23
ITL-103	Two-line v-network	R&S	ENV216	100120	2015/06/23	2016/06/23
ITL-101	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2015/03/09	2018/03/09

Radiated Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-100	Semi-Anechoic chamber	ETS•Lindgren	FACT3 2.0	CT09015	2013/06/17	2016/06/17
ITL-154	EMI test receiver 9kHz to 26.5GHz	R&S	ESR26	101257	2016/01/05	2017/01/05
ITL-105	Biconilog Antenna	ETS•Lindgren	3142D	00108096	2015/01/24	2018/01/24
ITL-116	Pre Amplifier	HP	8447F	3113A05905	2016/01/25	2017/01/25

RE Loop test						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-102	EMI Test receiver	R&S	ESCI	100910	2015/06/23	2016/06/23
ITL-106	Triple-Loop Antenna	Everfine	LLA-2	905001	2015/06/23	2018/06/23
ITL-101	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2015/03/09	2018/03/09

Harmonics / Flicker test						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-130	Harmonics analyzer with flicker meter	C.I.	PACS-1	72303	2016/01/25	2017/01/25
ITL-131	Power source	C.I.	5001iX+C TS-400	56049	2016/01/25	2017/01/25

Electrostatic Discharge						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-112	Electrostatic Discharge Generator	3ctest	ESD-30G	EC0281035	2015/07/01	2016/07/01

EFT, Surge, Voltage dips and Interruption						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-108	EMC Immunity Test System	Thermo Fisher Scientific	EMC Pro Plus	1006208	2016/01/25	2017/01/25

Conducted Immunity						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-135	9k-1.1GHz signal generator	R/S	SML01	100252	2016/01/25	2017/01/25
ITL-136	150k-230MHz 30W amplifier	Schaffner	CBA9425	1019	2016/01/25	2017/01/25
ITL-137	CDN	Schaffner	CDN M016	20054	2016/01/25	2017/01/25
ITL-139	6dB/50W attenuation	Schaffner	ATN6050	16033	2016/01/25	2017/01/25

Radiated Immunity						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-135	9k-1.1GHz signal generator	R&S	SML01	100252	2016/01/25	2017/01/25
ITL-144	RF power Amplifier	rflight	NTWPA-0 0810150E	13113217	2016/01/25	2017/01/25
ITL-105	Biconilog Antenna	ETS•Lindgren	3142D	00108096	2015/01/24	2018/01/24
ITL-100	Full Anechoic Chamber	ETS•Lindgren	FACT3 2.0	CT09015	2013/06/17	2016/06/17

Section 2 Emission Test Results

2.1 Conducted Emission at Mains Terminals, 9 kHz to 30MHz

Test Requirement:	EN 55015
Test Method:	EN 55015
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-10
Frequency Range:	9 kHz to 30MHz
Class /Severity	Table 2a of EN 55015
Detector:	Peak for pre-scan Quasi-Peak and Average for final test 200 Hz resolution bandwidth between 9 kHz & 150 kHz 9 kHz resolution bandwidth between 150 kHz & 30 MHz
Uncertainty:	U=2uc(V) = 2.85dB (For 9kHz-150kHz) 2Uc (V) = 2.3dB (For 150kHz-30MHz)

Limit:

Frequency range MHz	Limits dB (μV) [a]	
	Quasi-peak	Average
0.009 to 0.05	110	---
0.05 to 0.150	90 to 80 [b]	---
0.15 to 0.50	66 to 56 [b]	56 to 46 [b]
0.50 to 5	56 [c]	46 [c]
5 to 30	60	50

[a] At the transition frequency, the lower limit applies.
[b] The limit decreases linearly with the logarithm of the frequency in the ranges 50 kHz to 150 kHz and 150 kHz to 0.5 MHz.
[c] For electrodeless lamps and luminaires, the limit in the frequency range of 2.51 MHz to 3.0 MHz is 73 dB (μV) quasi-peak and 63 dB (μV) average.

2.1.1 E.U.T. Operation

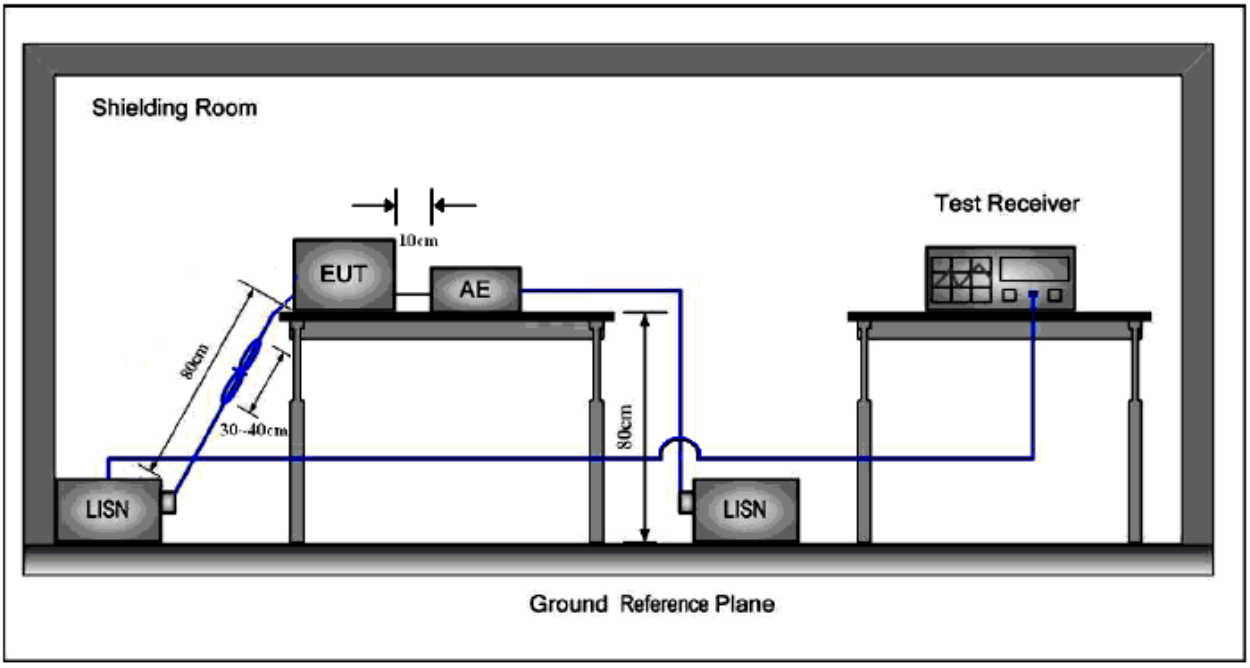
Operating Environment:

Temperature: 22.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Pre-test the EUT in On Mode with full load and half load to find the worse case, Compliance test the EUT in On Mode with full load as the worse case was found.

Pre-test the EUT supply voltage shall be within ±2 % of the rated voltage. In the case of a voltage range, measurement shall be carried out within ±2 % of each of the nominal supply voltages of that range. In order to check the level of disturbance varies considerably with the supply voltage, compliance test at AC 230V as no worse case was found.

2.1.2 Test Setup and Procedure

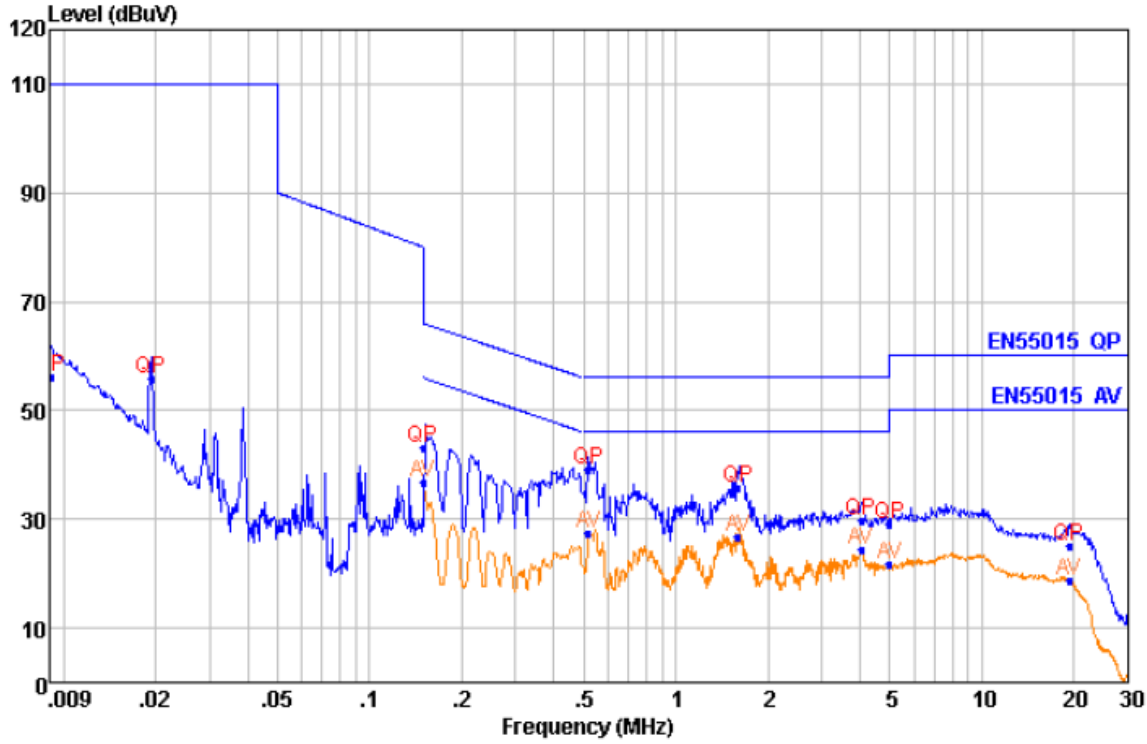


1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH+5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

2.1.3 Measurement Data

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.

Model: NLB200045W1U4S47
Live Line:
Peak Scan:
Level (dBµV)



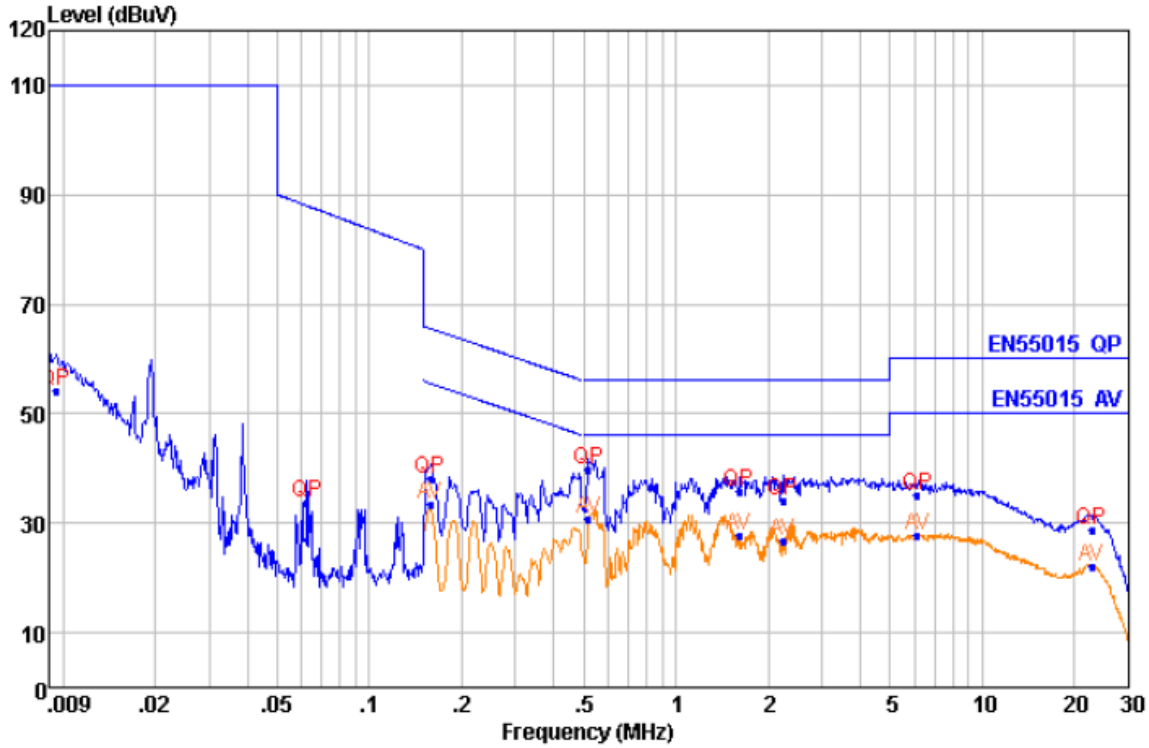
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.009	56.22	QP	9.79	0.10	110.00	-53.78
2	0.019	55.84	QP	9.48	0.31	110.00	-54.16
3	0.150	43.24	QP	9.36	0.39	66.00	-22.76
4	0.150	36.91	Average	9.36	0.39	56.00	-19.09
5	0.517	39.06	QP	9.32	0.44	56.00	-16.94
6	0.517	27.38	Average	9.32	0.44	46.00	-18.62
7	1.598	35.62	QP	9.30	0.48	56.00	-20.38
8	1.598	26.67	Average	9.30	0.48	46.00	-19.33
9	4.039	29.60	QP	9.30	0.52	56.00	-26.40
10	4.039	24.24	Average	9.30	0.52	46.00	-21.76
11	5.000	28.95	QP	9.29	0.53	56.00	-27.05
12	5.000	21.57	Average	9.29	0.53	46.00	-24.43
13	19.278	25.14	QP	9.71	0.58	60.00	-34.86
14	19.278	18.68	Average	9.71	0.58	50.00	-31.32

Neutral Line:

Peak Scan:

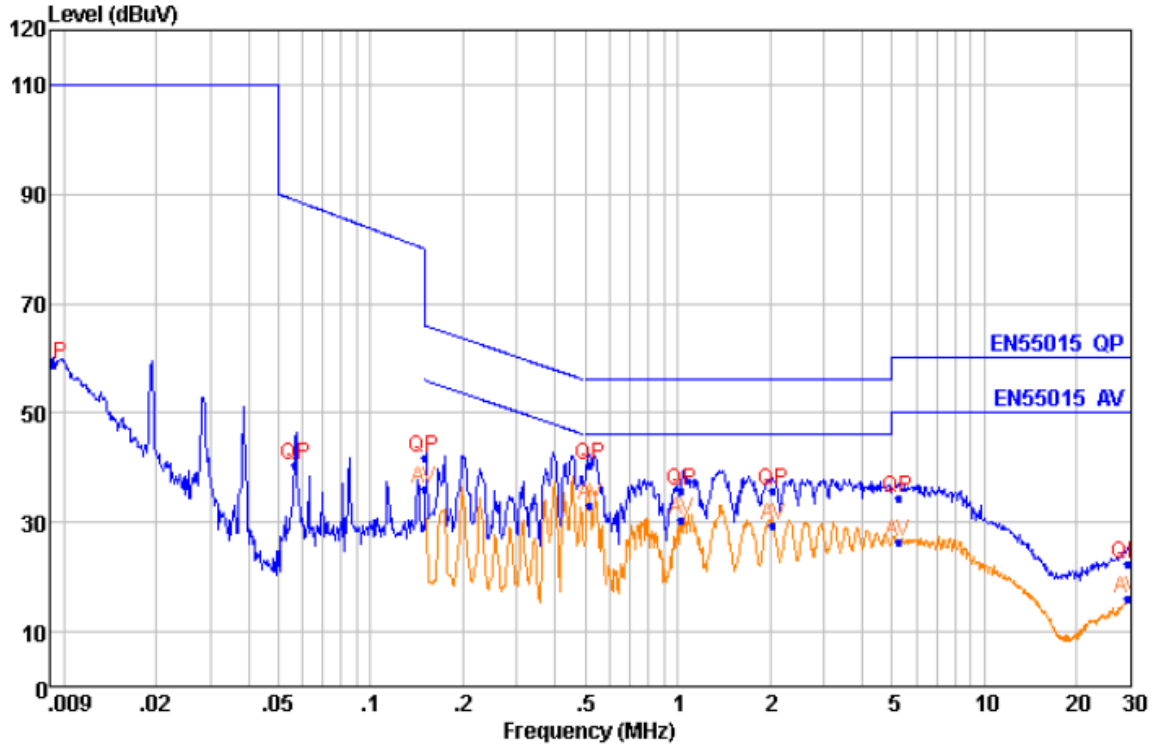
Level (dBμV)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.009	54.10	QP	10.05	0.12	110.00	-55.90
2	0.062	33.66	QP	9.43	0.36	87.97	-54.31
3	0.158	37.96	QP	9.38	0.39	65.58	-27.62
4	0.158	33.35	Average	9.38	0.39	55.56	-22.21
5	0.517	39.83	QP	9.36	0.44	56.00	-16.17
6	0.517	30.76	Average	9.36	0.44	46.00	-15.24
7	1.607	35.83	QP	9.38	0.48	56.00	-20.17
8	1.607	27.64	Average	9.38	0.48	46.00	-18.36
9	2.232	34.19	QP	9.39	0.50	56.00	-21.81
10	2.232	26.64	Average	9.39	0.50	46.00	-19.36
11	6.140	34.97	QP	9.46	0.54	60.00	-25.03
12	6.140	27.73	Average	9.46	0.54	50.00	-22.27
13	22.720	28.82	QP	9.84	0.59	60.00	-31.18
14	22.720	22.21	Average	9.84	0.59	50.00	-27.79

Model: NLB070216W1U4S47
Live Line:
Peak Scan:
Level (dBµV)



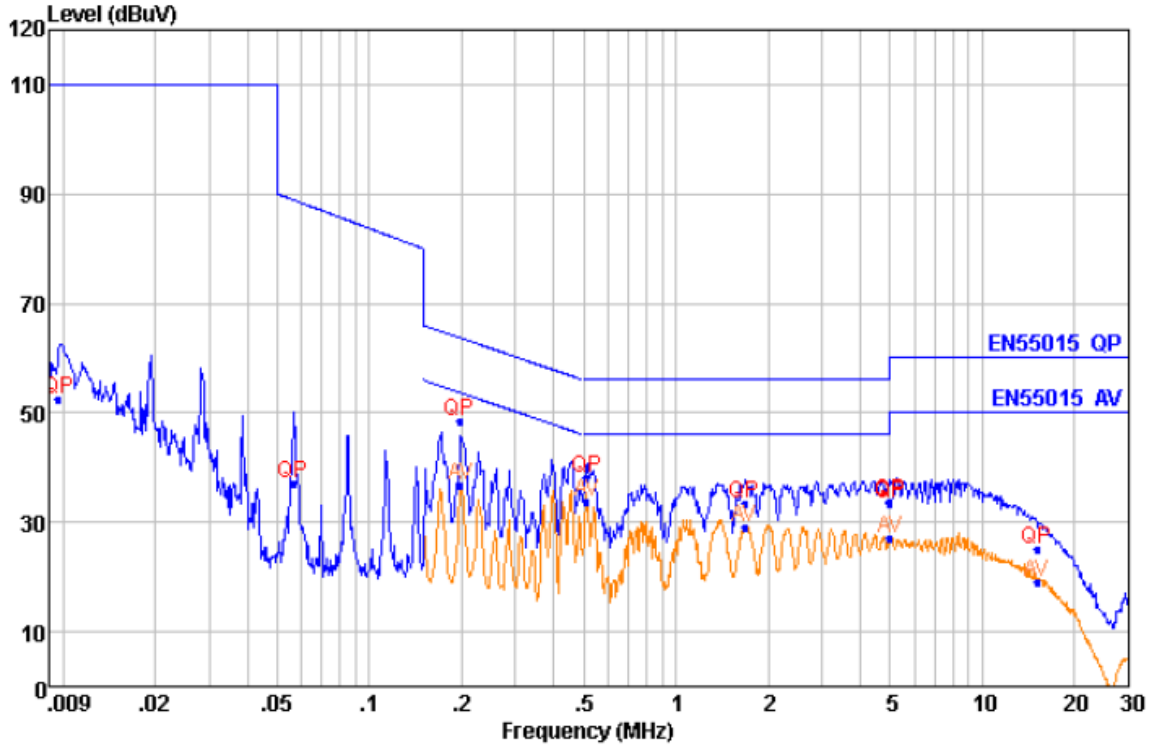
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.009	58.92	QP	9.78	0.11	110.00	-51.08
2	0.057	40.51	QP	9.41	0.35	88.85	-48.34
3	0.150	41.79	QP	9.36	0.39	66.00	-24.21
4	0.150	36.13	Average	9.36	0.39	56.00	-19.87
5	0.517	40.39	QP	9.32	0.44	56.00	-15.61
6	0.517	32.99	Average	9.32	0.44	46.00	-13.01
7	1.029	35.84	QP	9.27	0.47	56.00	-20.16
8	1.029	30.30	Average	9.27	0.47	46.00	-15.70
9	2.039	35.62	QP	9.32	0.49	56.00	-20.38
10	2.039	29.51	Average	9.32	0.49	46.00	-16.49
11	5.236	34.34	QP	9.29	0.53	60.00	-25.66
12	5.236	26.52	Average	9.29	0.53	50.00	-23.48
13	29.139	22.34	QP	9.73	0.60	60.00	-37.66
14	29.139	16.19	Average	9.73	0.60	50.00	-33.81

Neutral Line:

Peak Scan:

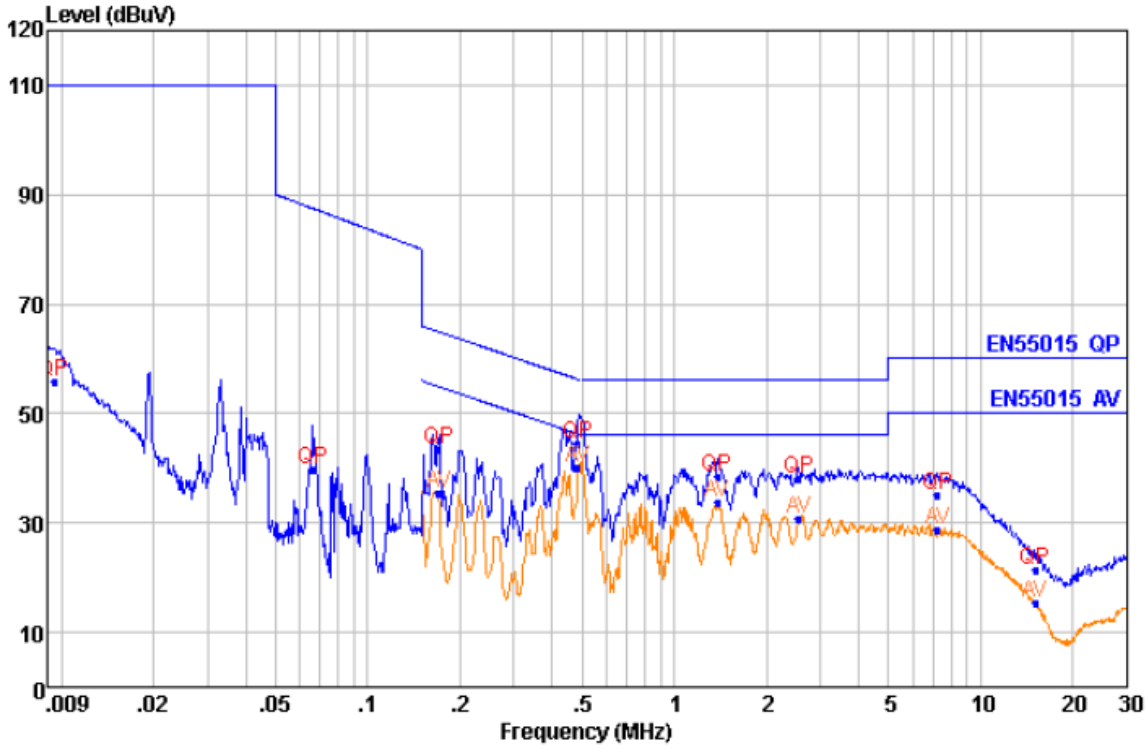
Level (dBμV)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.010	52.41	QP	10.04	0.13	110.00	-57.59
2	0.056	37.19	QP	9.45	0.35	88.92	-51.73
3	0.197	48.32	QP	9.37	0.40	63.73	-15.41
4	0.198	36.87	Average	9.37	0.40	53.71	-16.84
5	0.512	37.96	QP	9.36	0.44	56.00	-18.04
6	0.512	33.90	Average	9.36	0.44	46.00	-12.10
7	1.676	33.47	QP	9.38	0.49	56.00	-22.53
8	1.676	29.00	Average	9.38	0.49	46.00	-17.00
9	5.000	33.51	QP	9.43	0.53	56.00	-22.49
10	5.000	33.75	QP	9.43	0.53	56.00	-22.25
11	5.000	26.99	Average	9.43	0.53	46.00	-19.01
12	5.000	26.99	Average	9.43	0.53	46.00	-19.01
13	15.031	24.99	QP	9.66	0.57	60.00	-35.01
14	15.031	19.09	Average	9.66	0.57	50.00	-30.91

Model: NLB063240W1U4S47
Live Line:
Peak Scan:
Level (dBμV)



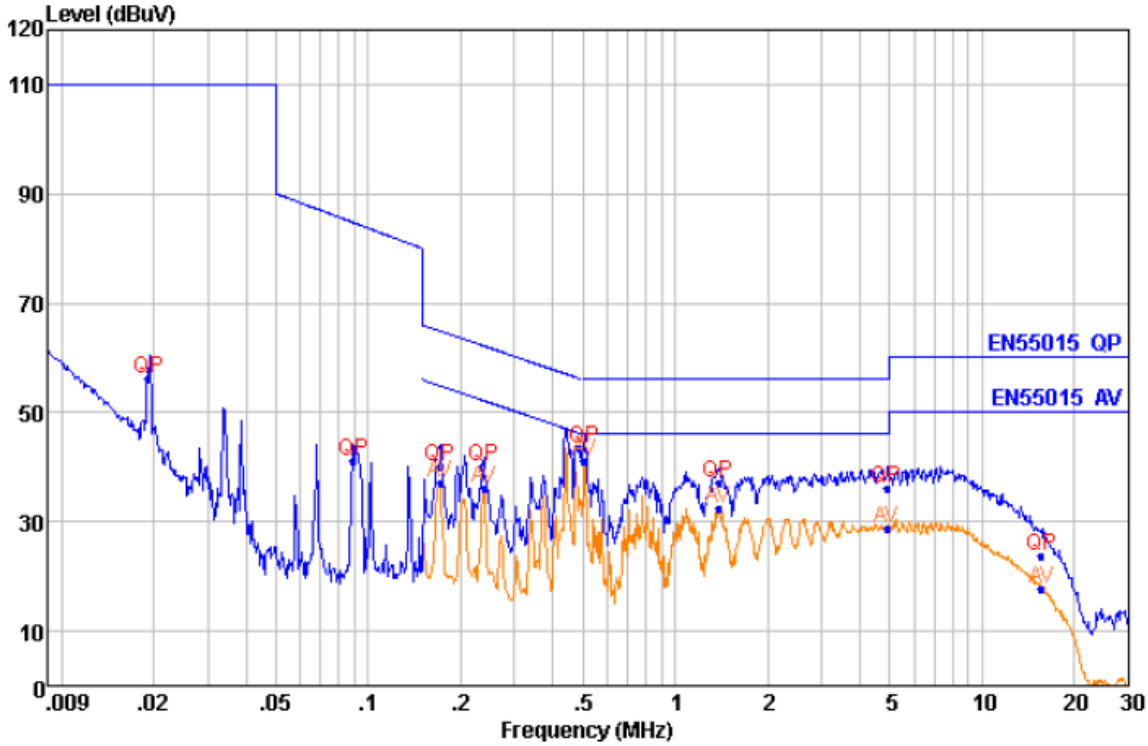
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.009	55.73	QP	9.77	0.12	110.00	-54.27
2	0.066	39.85	QP	9.41	0.36	87.49	-47.64
3	0.170	43.41	QP	9.44	0.40	64.96	-21.55
4	0.170	35.43	Average	9.44	0.40	54.94	-19.51
5	0.485	44.50	QP	9.34	0.44	56.25	-11.75
6	0.485	40.26	Average	9.34	0.44	46.25	-5.99
7	1.379	38.35	QP	9.29	0.48	56.00	-17.65
8	1.379	33.60	Average	9.29	0.48	46.00	-12.40
9	2.547	37.96	QP	9.31	0.50	56.00	-18.04
10	2.547	30.74	Average	9.31	0.50	46.00	-15.26
11	7.201	35.19	QP	9.31	0.54	60.00	-24.81
12	7.201	28.78	Average	9.31	0.54	50.00	-21.22
13	15.031	21.31	QP	9.36	0.57	60.00	-38.69
14	15.031	15.51	Average	9.36	0.57	50.00	-34.49

Neutral Line:

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.019	56.15	QP	9.50	0.31	110.00	-53.85
2	0.089	41.20	QP	9.41	0.37	84.71	-43.51
3	0.171	39.96	QP	9.38	0.40	64.91	-24.95
4	0.171	36.96	Average	9.38	0.40	54.91	-17.95
5	0.237	39.97	QP	9.37	0.41	62.19	-22.22
6	0.238	36.13	Average	9.37	0.41	52.17	-16.04
7	0.504	43.47	QP	9.36	0.44	56.00	-12.53
8	0.504	41.15	Average	9.36	0.44	46.00	-4.85
9	1.385	37.14	QP	9.38	0.48	56.00	-18.86
10	1.385	32.46	Average	9.38	0.48	46.00	-13.54
11	4.887	36.05	QP	9.43	0.53	56.00	-19.95
12	4.887	28.89	Average	9.43	0.53	46.00	-17.11
13	15.594	23.57	QP	9.69	0.57	60.00	-36.43
14	15.594	17.86	Average	9.69	0.57	50.00	-32.14

2.2 Radiated Electromagnetic Disturbance Test: 9 kHz -30 MHz

Test Requirement:	EN 55015
Test Method:	EN 55015
Frequency Range:	9 kHz to 30MHz
Power Supply:	AC 230V, 50Hz
Test Date:	2016-03-14
Detector:	Peak for pre-scan Quasi-Peak for final test 200 Hz resolution bandwidth between 9 kHz & 150 kHz 9 kHz resolution bandwidth between 150 kHz & 30 MHz
Uncertainty:	2Uc (V) = 1.91 dB

Limit:

Frequency range MHz	Limits for loop diameter limits 2m dB (μA) [a]
0.009 to 0.070	88
0.070 to 0.150	88 to 58 [b]
0.150 to 3.0	58 to 22 [b]
3.0 to 30.0	22

[a] At the transition frequency, the lower limit applies.

[b] Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaires, the limit in the frequency range of 2.2 MHz to 3.0 MHz is 58 dB (μA) for 2 m, 51 dB (μA) for 3 m and 45 dB (μA) for 4 m loop diameter.

2.2.1 E.U.T. Operation

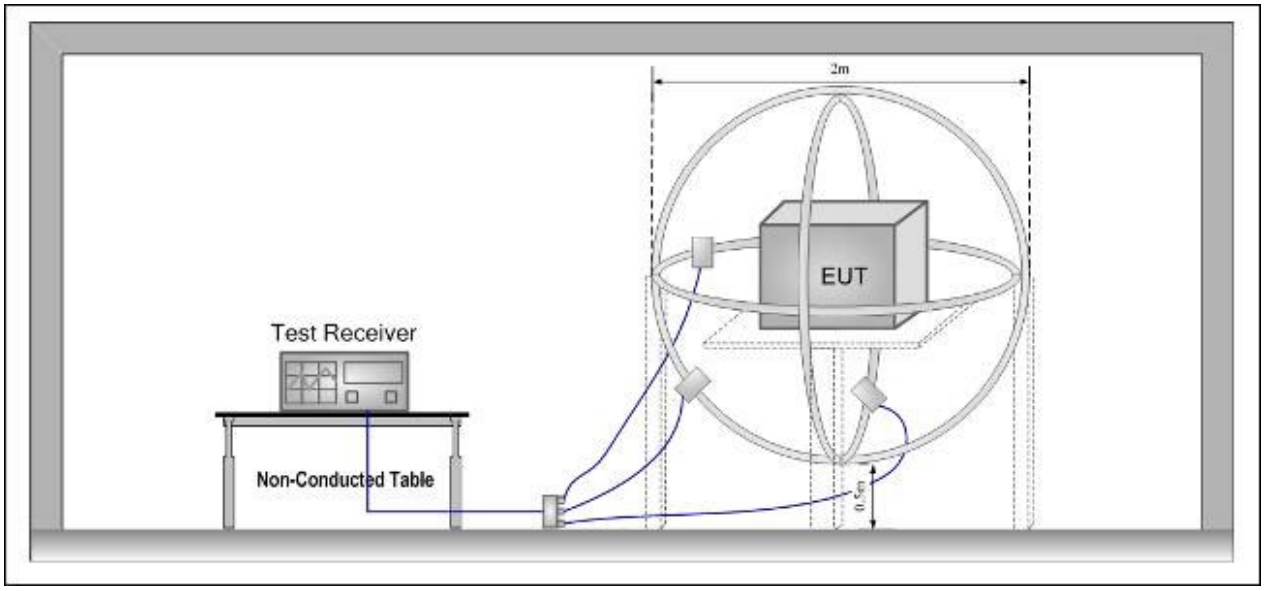
Operating Environment:

Temperature: 22.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Pre-test the EUT in On Mode with full load and half load to find the worse case, Compliance test the EUT in On Mode with full load as the worse case was found.

Pre-test the EUT supply voltage shall be within ±2 % of the rated voltage. In the case of a voltage range, measurement shall be carried out within ±2 % of each of the nominal supply voltages of that range. In order to check the level of disturbance varies considerably with the supply voltage, compliance test at AC 230V as no worse case was found.

2.2.2 Test Setup and Procedure

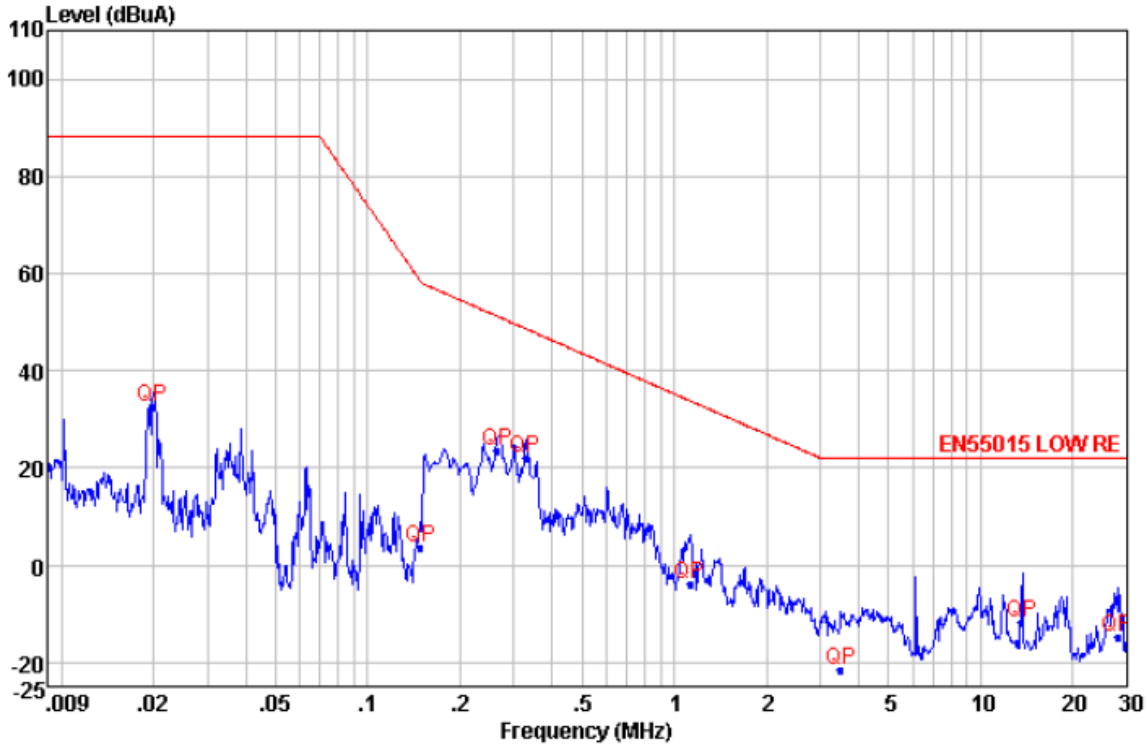


1. The magnetic component was measured by means of a loop antenna. The lighting equipment was placed in the centre of the antenna. The position of the mains lead was optimized for maximum current induction.
2. The induced current in the loop antenna was measured by means of a current probe (1 V/A) and the CISPR measuring receiver. During the measurements the EUT remains in a fixed position. By means of a coaxial switch, The currents in the three large loop antennas, originating from the three mutually orthogonal magnetic field components, were measured in sequence. Each value was fulf the requirements given.
3. There were no special instructions for the supply wiring.
4. The distance between the outer perimeter of the LAS(Loop Antenna System) and nearby objects, such as floor and walls, was at least 0.5 m.
5. To avoid unwanted capacitive coupling between the EUT and the LAS, the maximum dimensions of the EUT allowed a distance of at least 0.20 m between the EUT and the standardized 2 m large loop antennas of the LAS.

2.2.3 Measurement Data

An initial pre-scan was performed in the 2 m loop antenna using the spectrum analyser in peak detection mode. The EUT was measured for X(A), Y(B), Z(C) polarities. (EN 55015 Table 3a column 2).

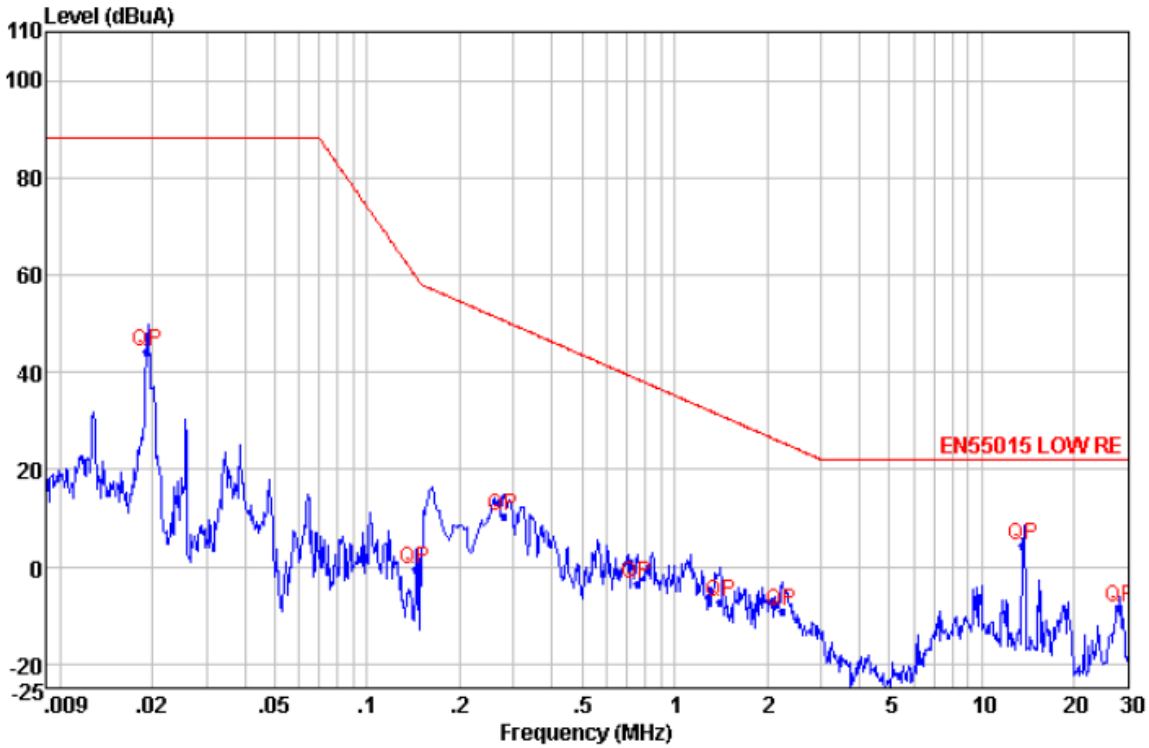
Test model: NLB200045W1U4S47
Peak Measurement Data of A_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.020	32.35	QP	17.24	0.31	88.02	-55.67
2	0.149	3.46	QP	12.58	0.39	58.37	-54.91
3	0.265	23.44	QP	12.58	0.41	51.17	-27.73
4	0.326	21.96	QP	12.58	0.42	48.69	-26.73
5	1.121	-3.80	QP	12.18	0.47	33.85	-37.65
6	3.482	-21.72	QP	11.96	0.51	22.02	-43.74
7	13.588	-11.84	QP	16.42	0.57	22.02	-33.86
8	27.933	-14.72	QP	16.82	0.60	22.02	-36.74

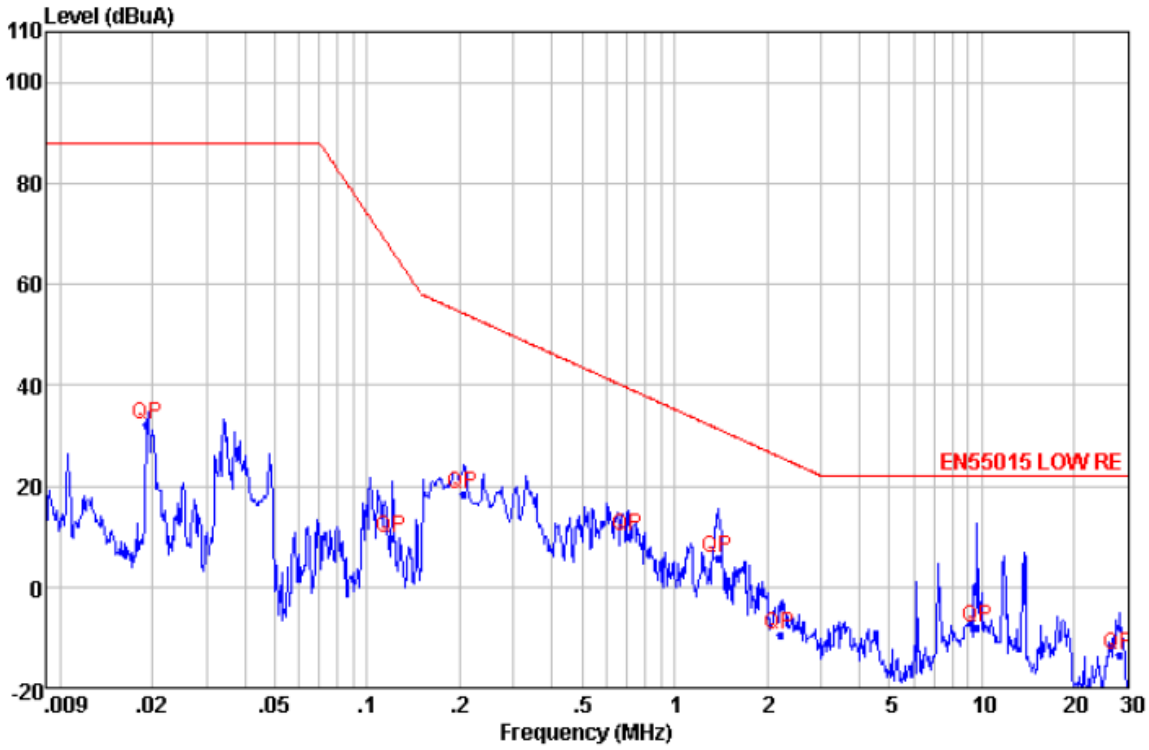
Peak Measurement Data of B_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	44.09	QP	19.81	0.31	88.02	-43.93
2	0.144	-0.52	QP	13.32	0.39	59.71	-60.23
3	0.277	10.43	QP	13.04	0.42	50.67	-40.24
4	0.757	-3.73	QP	12.60	0.45	38.56	-42.29
5	1.408	-7.40	QP	12.43	0.48	31.11	-38.51
6	2.232	-9.18	QP	12.54	0.50	25.57	-34.75
7	13.588	4.37	QP	16.55	0.57	22.02	-17.65
8	28.115	-8.29	QP	16.72	0.60	22.02	-30.31

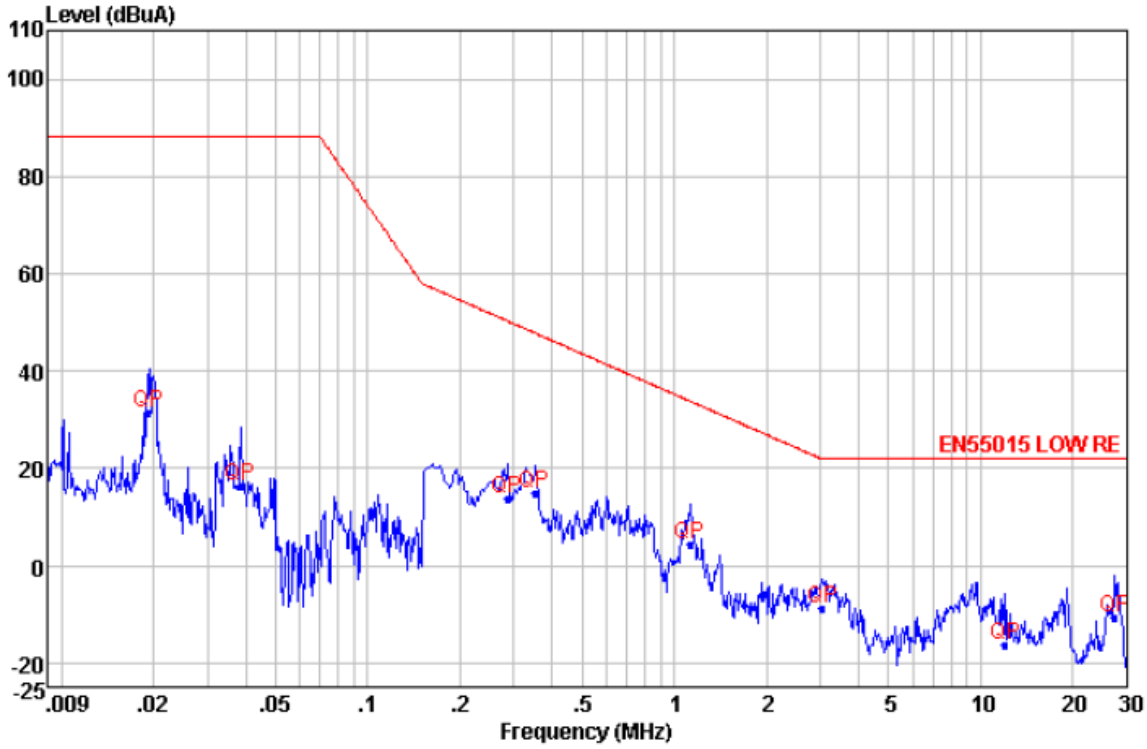
Peak Measurement Data of C_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	32.31	QP	20.24	0.31	88.02	-55.71
2	0.120	9.56	QP	13.47	0.38	66.71	-57.15
3	0.206	18.41	QP	13.17	0.40	54.23	-35.82
4	0.703	9.99	QP	12.67	0.45	39.46	-29.47
5	1.379	5.57	QP	12.46	0.48	31.36	-25.79
6	2.196	-9.41	QP	12.66	0.50	25.77	-35.18
7	9.634	-8.09	QP	17.33	0.56	22.02	-30.11
8	27.933	-13.57	QP	16.79	0.60	22.02	-35.59

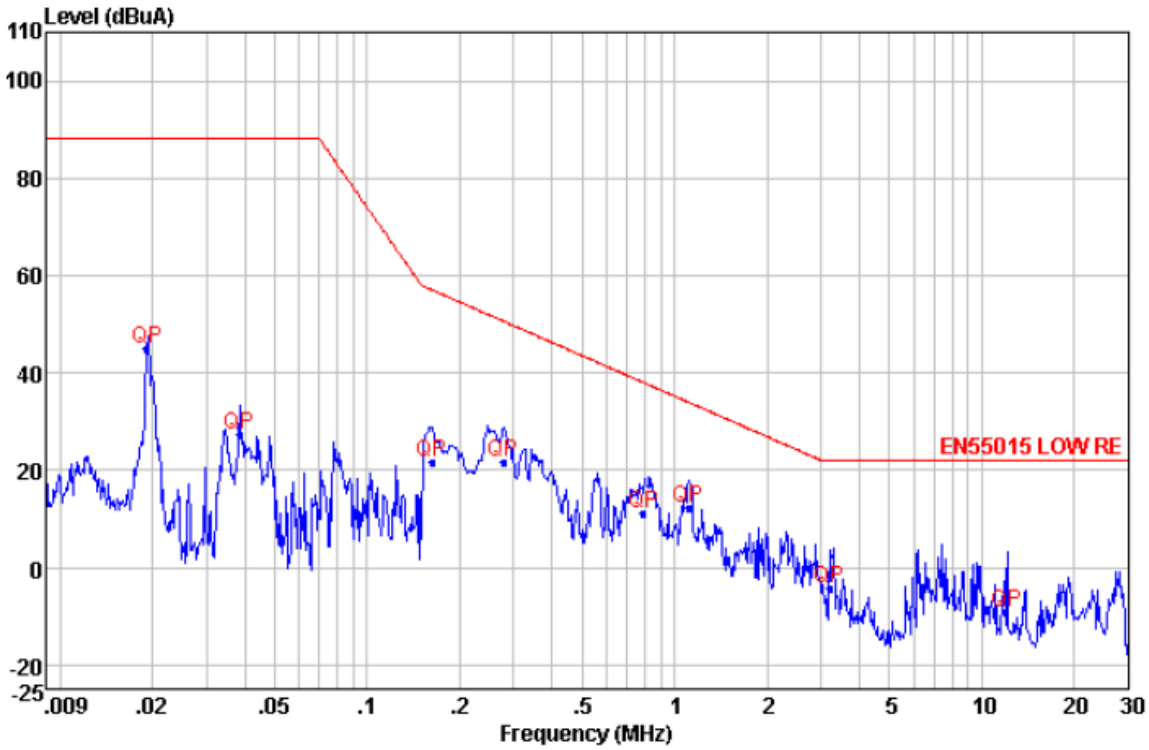
Test model: NLB070216W1U4S47
Peak Measurement Data of A_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	31.38	QP	17.53	0.31	88.02	-56.64
2	0.038	16.33	QP	14.26	0.34	88.02	-71.69
3	0.286	13.55	QP	12.58	0.42	50.28	-36.73
4	0.349	15.00	QP	12.58	0.42	47.86	-32.86
5	1.121	4.37	QP	12.18	0.47	33.85	-29.48
6	3.035	-8.67	QP	12.14	0.51	22.02	-30.69
7	11.975	-16.39	QP	16.69	0.56	22.02	-38.41
8	27.358	-10.68	QP	16.74	0.60	22.02	-32.70

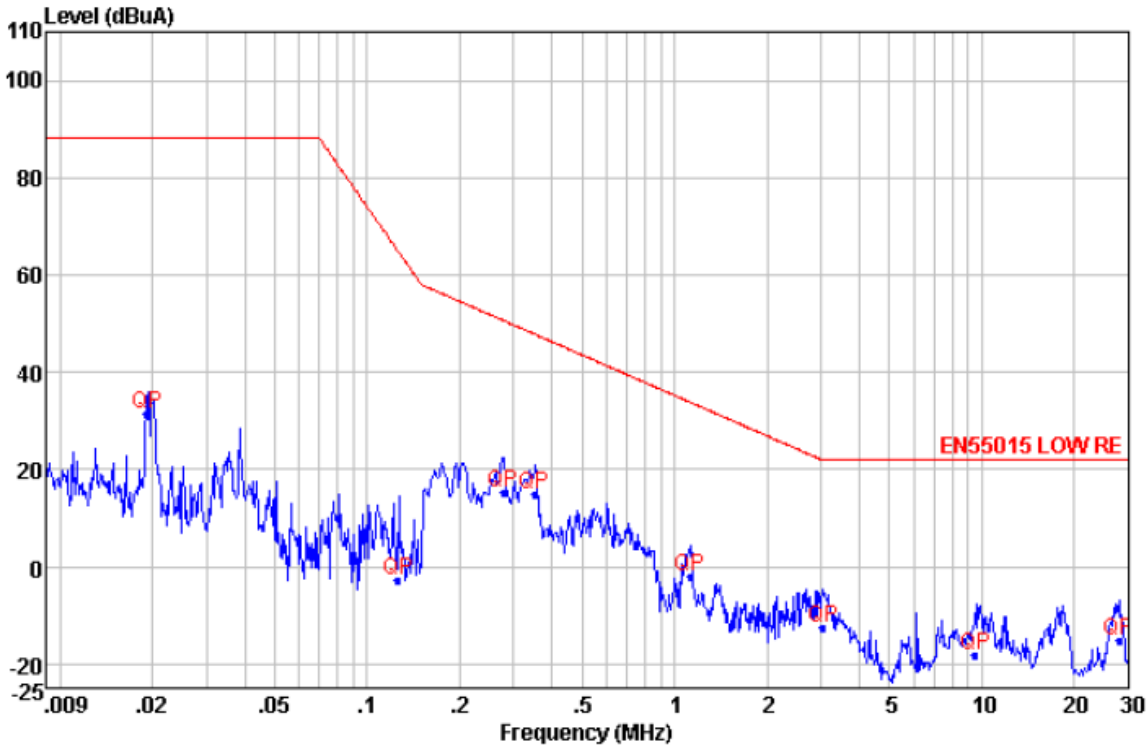
Peak Measurement Data of B_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	44.78	QP	19.76	0.31	88.02	-43.24
2	0.038	27.42	QP	16.08	0.34	88.02	-60.60
3	0.163	21.76	QP	13.27	0.39	57.03	-35.27
4	0.277	21.55	QP	13.04	0.42	50.67	-29.12
5	0.795	11.06	QP	12.58	0.46	37.99	-26.93
6	1.109	12.31	QP	12.25	0.47	33.98	-21.67
7	3.200	-4.20	QP	12.07	0.51	22.02	-26.22
8	12.041	-9.25	QP	16.76	0.56	22.02	-31.27

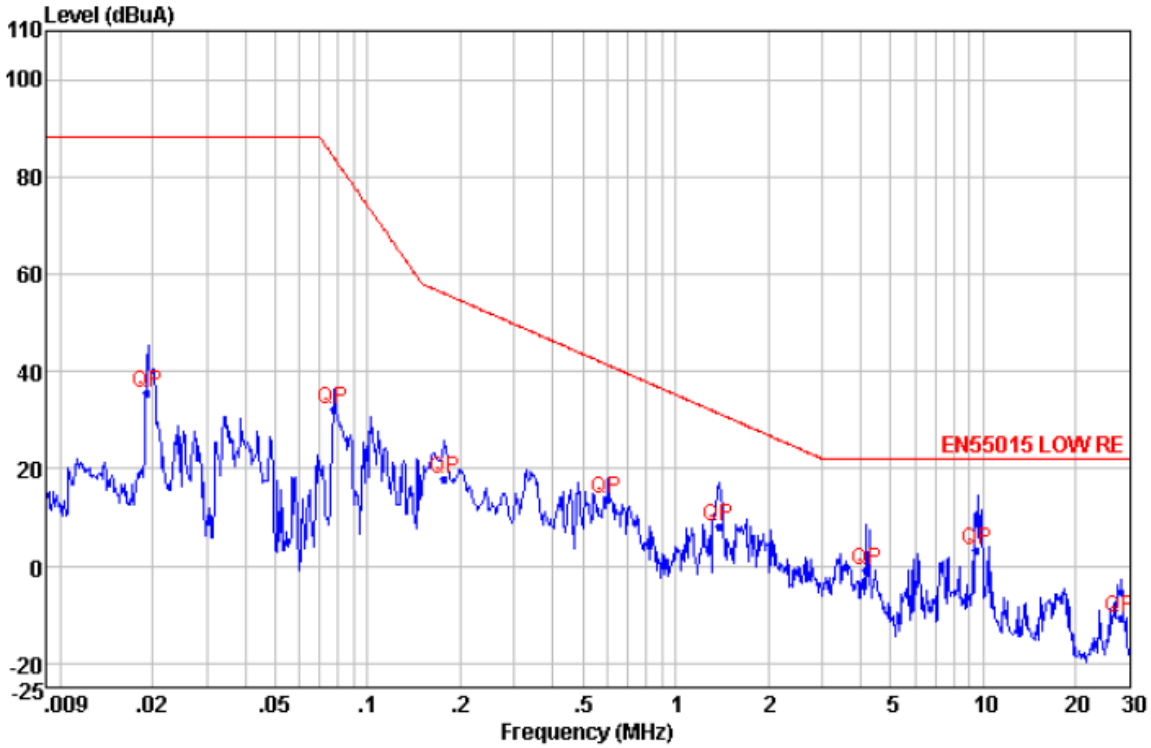
Peak Measurement Data of C_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	31.55	QP	20.29	0.31	88.02	-56.47
2	0.126	-2.94	QP	13.44	0.38	64.81	-67.75
3	0.277	15.26	QP	13.04	0.42	50.67	-35.41
4	0.349	14.79	QP	12.94	0.42	47.86	-33.07
5	1.121	-2.07	QP	12.28	0.47	33.85	-35.92
6	3.035	-12.57	QP	12.24	0.51	22.02	-34.59
7	9.529	-18.13	QP	17.40	0.55	22.02	-40.15
8	27.933	-15.18	QP	16.79	0.60	22.02	-37.20

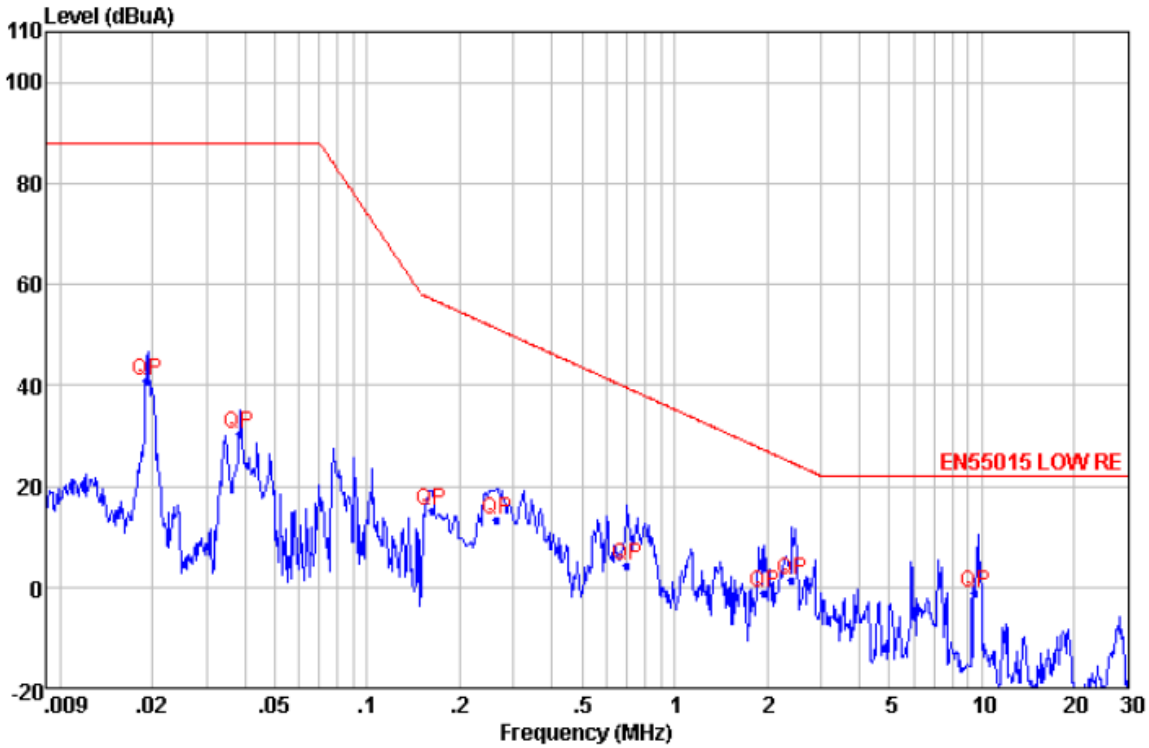
Test model: NLB063240W1U4S47
Peak Measurement Data of A_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	35.39	QP	17.53	0.31	88.02	-52.63
2	0.077	32.25	QP	13.22	0.36	84.15	-51.90
3	0.177	17.73	QP	12.58	0.40	56.01	-38.28
4	0.600	13.65	QP	12.48	0.45	41.37	-27.72
5	1.379	8.22	QP	12.36	0.48	31.36	-23.14
6	4.170	-0.78	QP	11.66	0.52	22.02	-22.80
7	9.529	3.27	QP	17.36	0.55	22.02	-18.75
8	27.933	-10.74	QP	16.82	0.60	22.02	-32.76

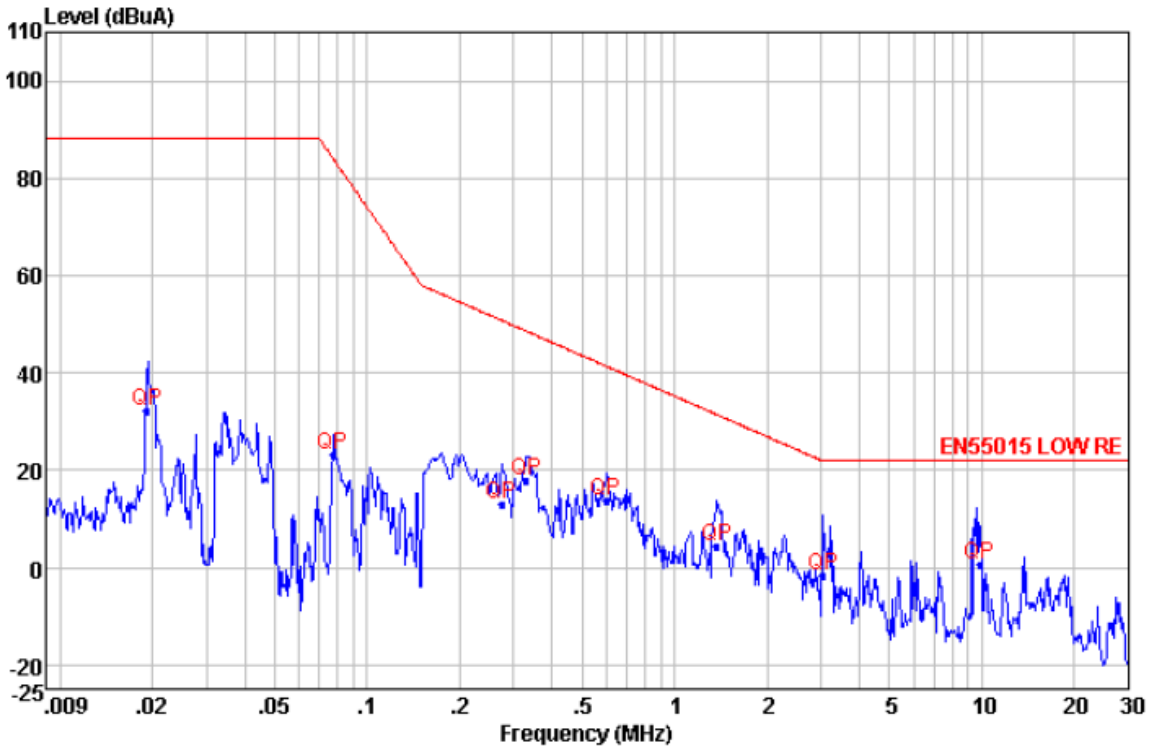
Peak Measurement Data of B_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	41.00	QP	19.81	0.31	88.02	-47.02
2	0.038	30.19	QP	16.08	0.34	88.02	-57.83
3	0.163	15.24	QP	13.27	0.39	57.03	-41.79
4	0.265	13.14	QP	13.06	0.41	51.17	-38.03
5	0.699	4.40	QP	12.63	0.45	39.52	-35.12
6	1.955	-1.10	QP	12.66	0.49	27.17	-28.27
7	2.404	1.22	QP	12.44	0.50	24.68	-23.46
8	9.529	-1.00	QP	17.38	0.55	22.02	-23.02

Peak Measurement Data of C_Loop Peak Scan



Quasi-peak measurement

NO.	Freq MHz	Level dBuA	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuA	Over Limit dB
1	0.019	32.25	QP	20.24	0.31	88.02	-55.77
2	0.077	23.16	QP	14.25	0.36	84.15	-60.99
3	0.274	12.87	QP	13.04	0.41	50.79	-37.92
4	0.330	17.80	QP	12.96	0.42	48.55	-30.75
5	0.600	13.57	QP	12.78	0.45	41.37	-27.80
6	1.371	4.41	QP	12.45	0.48	31.43	-27.02
7	3.035	-1.69	QP	12.24	0.51	22.02	-23.71
8	9.837	0.53	QP	17.19	0.56	22.02	-21.49

2.3 Radiated Emissions, 30MHz to 300MHz

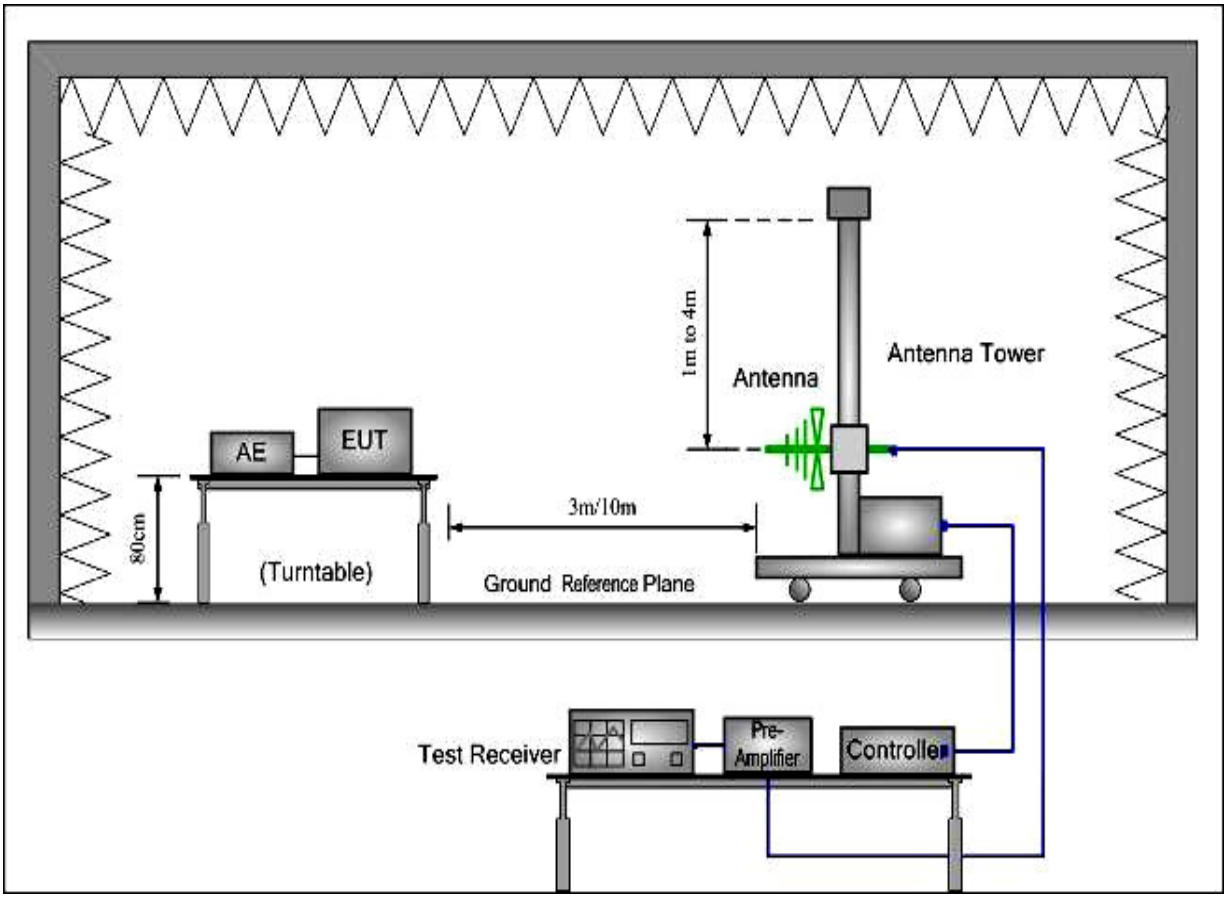
Test Requirement: EN 55015
Test Method: EN 55015
Test Voltage: AC 230V, 50Hz
Test Date: 2016-03-15
Frequency Range: 30MHz to 300MHz
Measurement Distance 3m
Detector: Peak for pre-scan (120 kHz resolution bandwidth)
Quasi-Peak for final test (120 kHz resolution bandwidth)
Uncertainty: 2Uc（V）= 3.35dB
Limit:

Frequency range MHz	**Quasi-peak limits** dB (μV/m)
30 to 230	40
230 to 300	47
At transitional frequencies the lower limit applies	

2.3.1 E.U.T. Operation

Operating Environment:
Temperature: 22.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa
EUT Operation: Pre-test the EUT in On Mode with full load and half load to find the worse case, Compliance test the EUT in On Mode with full load as the worse case was found.
Pre-test the EUT supply voltage shall be within ±2 % of the rated voltage. In the case of a voltage range, measurement shall be carried out within ±2 % of each of the nominal supply voltages of that range. In order to check the level of disturbance varies considerably with the supply voltage, compliance test at AC 230V as no worse case was found.

2.3.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 300MHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360° , and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

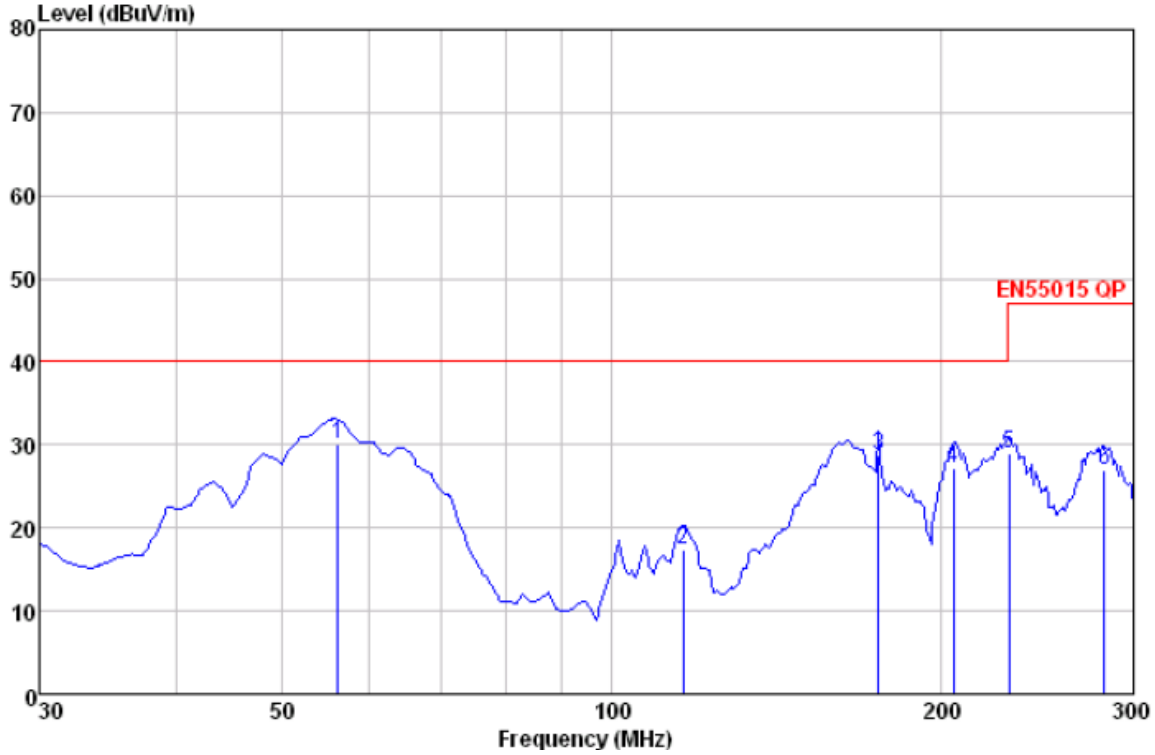
2.3.3 Measurement Data

Model: NLB200045W1U4S47

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

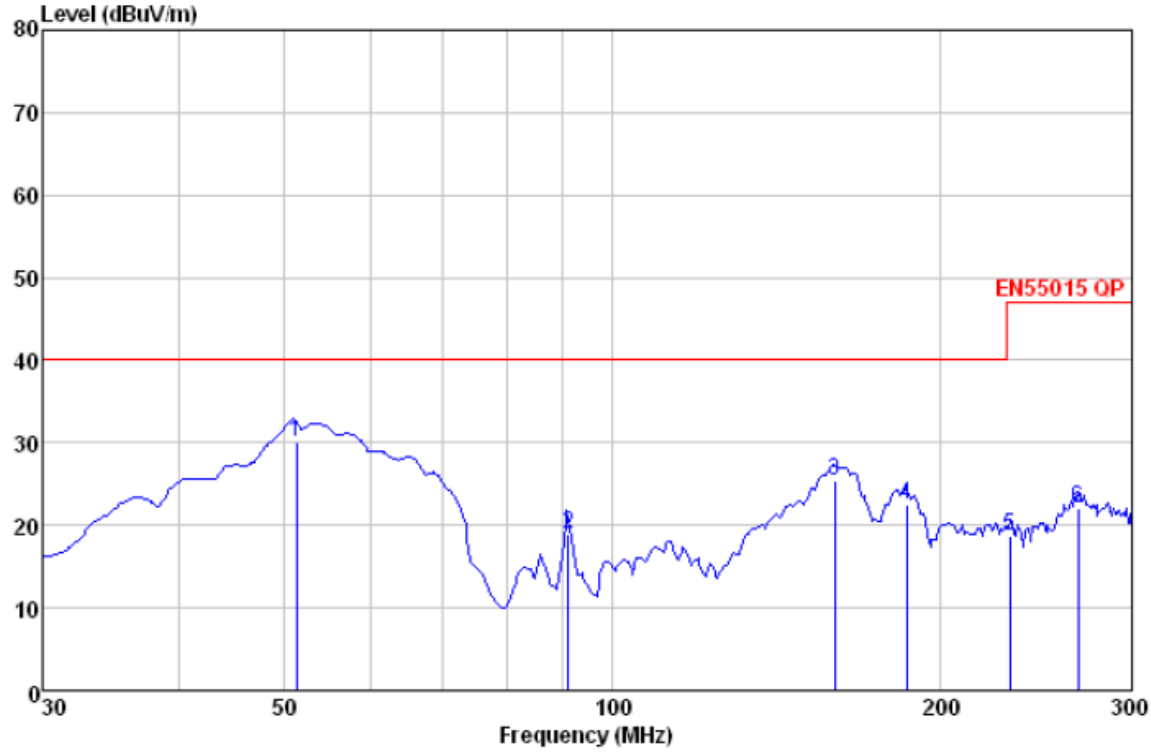
No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	56.190	30.19	QP	7.27	0.86	40.00	-9.81	100	21
2	116.330	17.34	QP	8.06	1.27	40.00	-22.66	100	265
3	175.500	28.68	QP	8.21	1.59	40.00	-11.32	100	230
4	205.570	27.21	QP	9.11	1.73	40.00	-12.79	100	31
5	230.790	28.88	QP	11.15	1.84	47.00	-18.12	100	254
6	282.200	26.87	QP	13.27	2.05	47.00	-20.13	100	274

Level=Read Level + Antenna Factor + Cable Loss

Vertical:

Peak scan

Level (dBμV/m)

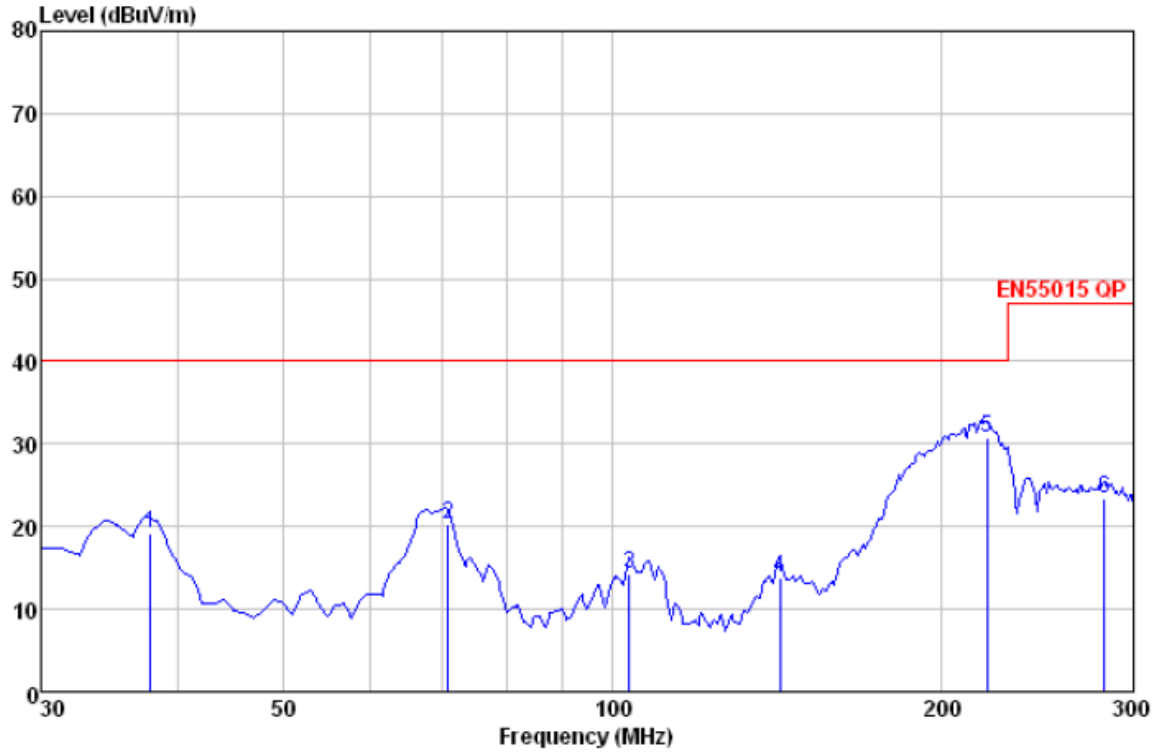


Quasi-peak measurement

No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	51.340	30.07	QP	8.10	0.82	40.00	-9.93	100	125
2	91.110	18.91	QP	8.25	1.11	40.00	-21.09	100	215
3	159.980	25.38	QP	7.80	1.51	40.00	-14.62	100	285
4	186.170	22.51	QP	8.44	1.64	40.00	-17.49	100	231
5	231.760	18.71	QP	11.09	1.85	47.00	-28.29	100	236
6	267.650	22.15	QP	12.72	2.00	47.00	-24.85	100	154

Level=Read Level + Antenna Factor + Cable Loss

Model: NLB070216W1U4S47
Horizontal:
Peak scan
Level (dBμV/m)



Quasi-peak measurement

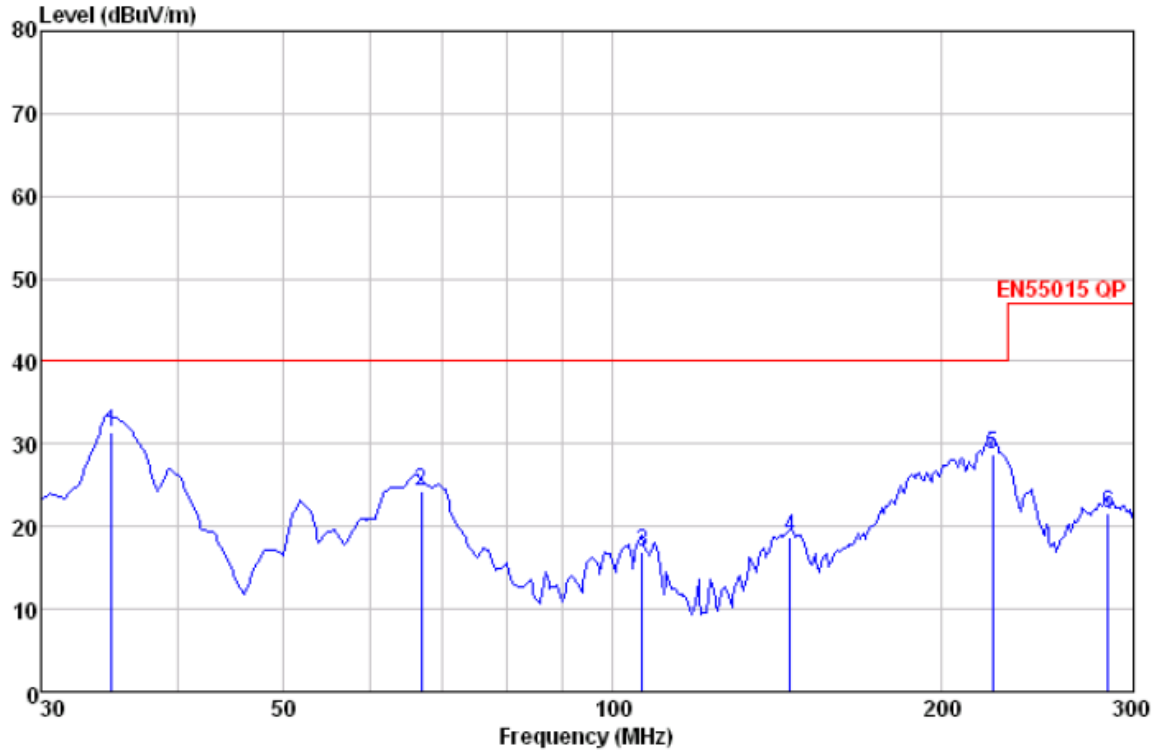
No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	37.760	19.27	QP	13.34	0.70	40.00	-20.73	100	21
2	70.740	20.34	QP	7.06	0.98	40.00	-19.66	100	265
3	103.720	14.35	QP	8.55	1.19	40.00	-25.65	100	26
4	142.520	13.82	QP	7.40	1.42	40.00	-26.18	100	23
5	220.120	30.75	QP	10.11	1.80	40.00	-9.25	100	295
6	282.200	23.38	QP	13.27	2.05	47.00	-23.62	100	236

Level=Read Level + Antenna Factor + Cable Loss

Vertical:

Peak scan

Level (dBμV/m)

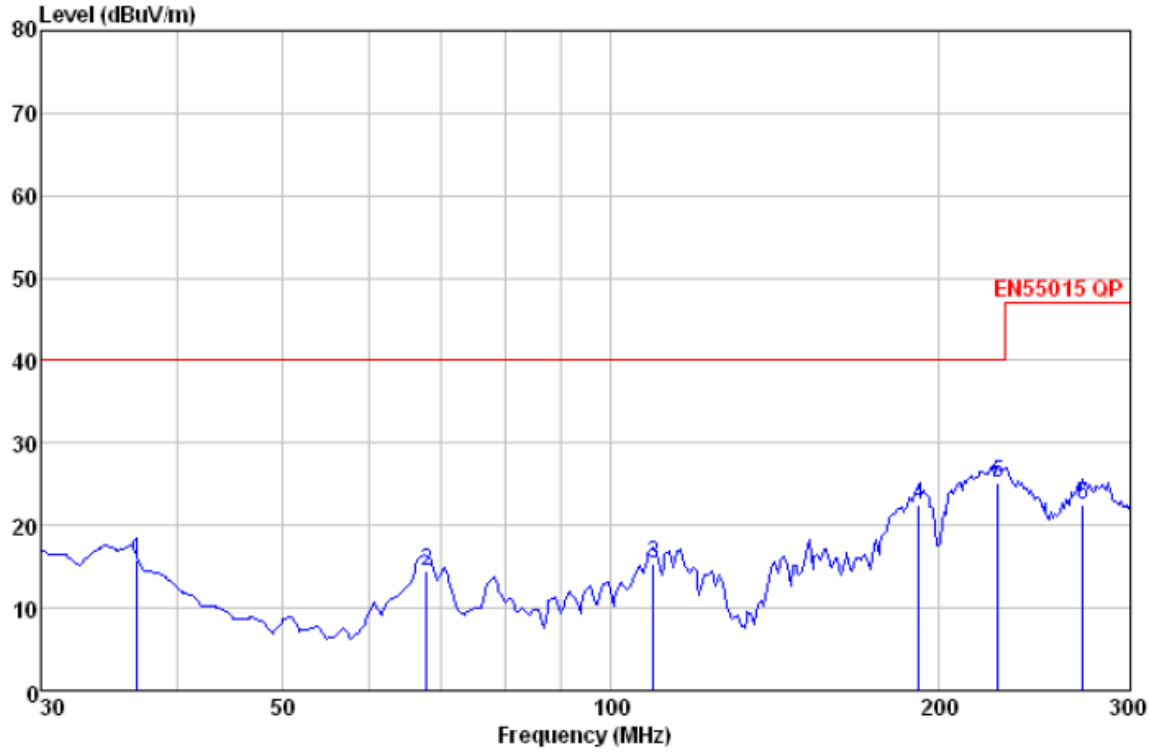


Quasi-peak measurement

No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	34.850	31.42	QP	15.08	0.67	40.00	-8.58	100	142
2	66.860	24.21	QP	6.94	0.95	40.00	-15.79	100	214
3	106.630	16.86	QP	8.50	1.21	40.00	-23.14	100	11
4	145.430	18.71	QP	7.37	1.44	40.00	-21.29	100	132
5	223.030	28.72	QP	10.47	1.81	40.00	-11.28	100	256
6	284.140	21.59	QP	13.50	2.06	47.00	-25.41	100	295

Level=Read Level + Antenna Factor + Cable Loss

Model: NLB063240W1U4S47
Horizontal:
Peak scan
Level (dBμV/m)



Quasi-peak measurement

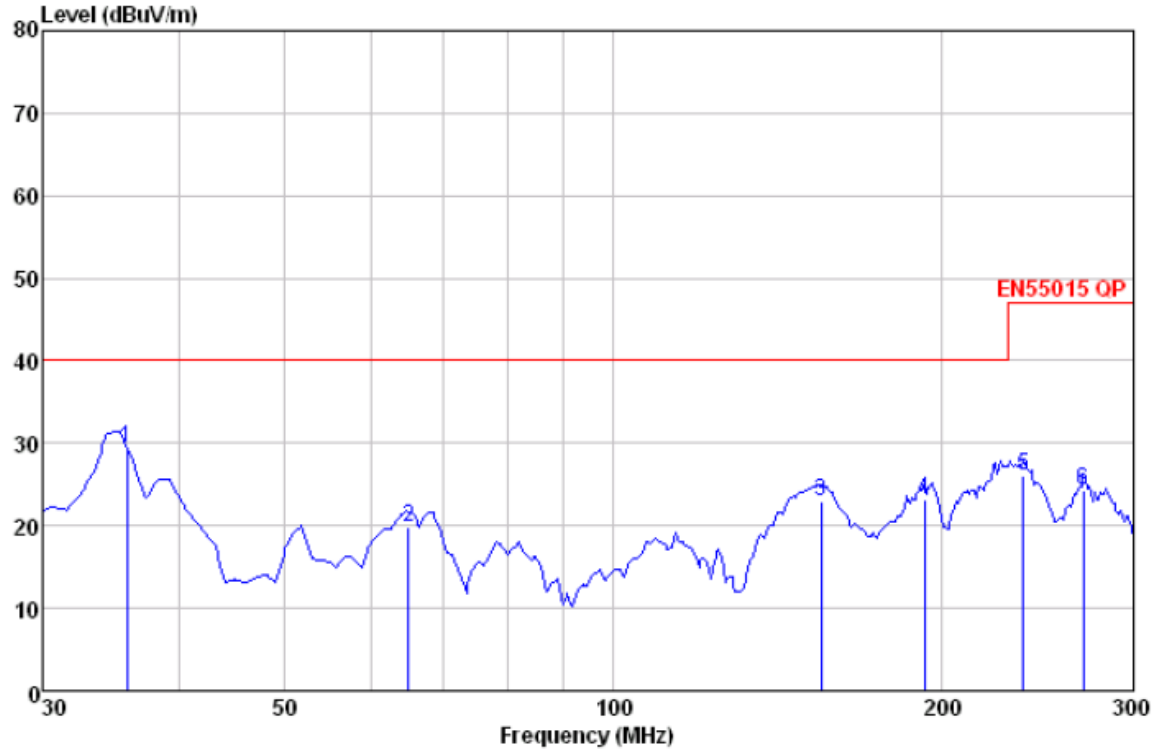
No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	36.790	15.80	QP	13.92	0.69	40.00	-24.20	100	120
2	67.830	14.49	QP	6.96	0.96	40.00	-25.51	100	152
3	109.540	15.47	QP	8.50	1.23	40.00	-24.53	100	265
4	191.990	22.51	QP	8.66	1.67	40.00	-17.49	100	230
5	226.910	25.25	QP	10.89	1.83	40.00	-14.75	100	294
6	271.530	22.53	QP	12.88	2.01	47.00	-24.47	100	36

Level=Read Level + Antenna Factor + Cable Loss

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	35.820	29.35	QP	14.51	0.68	40.00	-10.65	100	10
2	64.920	19.75	QP	6.90	0.94	40.00	-20.25	100	21
3	155.130	23.05	QP	7.61	1.49	40.00	-16.95	100	265
4	192.960	23.13	QP	8.54	1.67	40.00	-16.87	100	23
5	237.580	26.05	QP	10.90	1.87	47.00	-20.95	100	294
6	269.590	24.33	QP	12.95	2.01	47.00	-22.67	100	265

Level=Read Level + Antenna Factor + Cable Loss

2.4 Harmonics Test Results

Test Requirement:	EN 61000-3-2
Frequency Range:	100Hz to 2kHz
Measurement Time:	3 min
Class / Limit:	Class A
Test Date:	**N/A: See Remark Below**

Remark:

There is no need for Harmonics test to be performed on this product (rated power is less than 25W for not discharge lighting) in accordance with EN 61000-3-2:2014 For further details, please refer to Clause 7.3(b) of EN 61000-3-2 which states: "For the following categories of equipment limits are not specified in this edition of the standard.

2.5 Flicker Test Results

Test Requirement:	EN 61000-3-3
Test Method:	EN 61000-3-3
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-16
Measurement Time	10 mins
Class / Limit:	Clause 5 of EN 61000-3-3

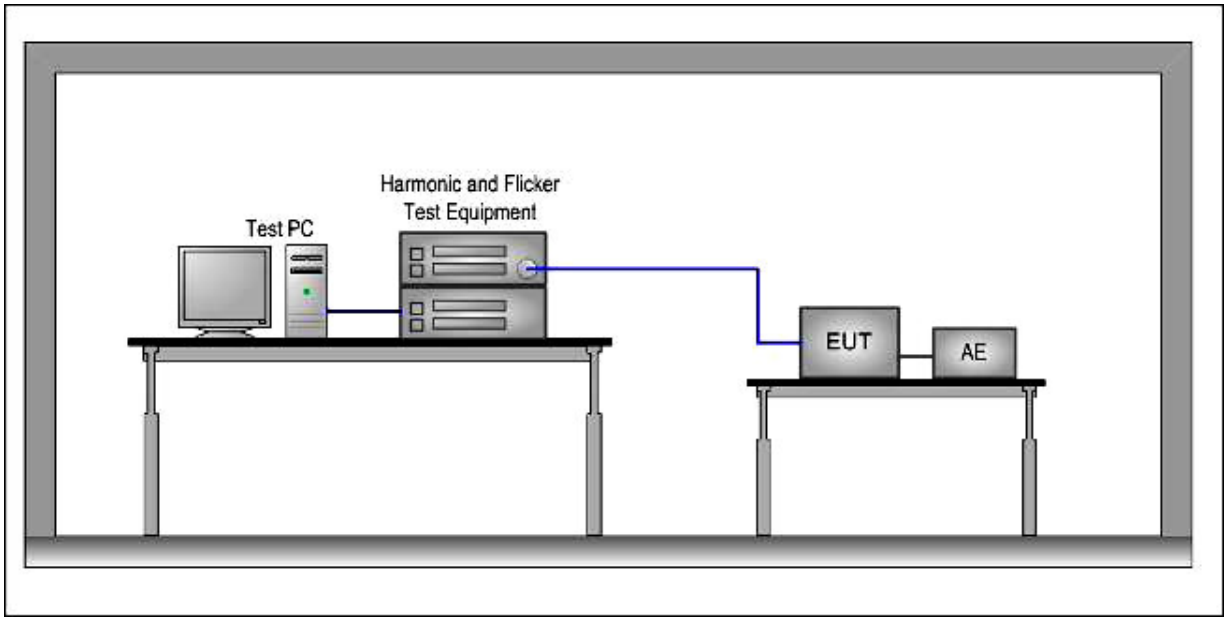
2.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 51 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Pre-test the EUT in On Mode with full load and half load to find the worse case, Compliance test the EUT in On Mode with full load as the worse case was found.

2.5.2 Test Setup and Procedure



1. The test supply voltage (open-circuit voltage) was the rated voltage of the EUT. The test voltage was maintained within ±2 % of the nominal value. The frequency was 50 Hz ±0.5 %.
2. The voltage fluctuations and flicker were measured at the supply terminals of the EUT.
3. The observation period, Tp, for the assessment of flicker values by flicker measurement, flicker simulation, or analytical method was:
   —for Pst, Tp = 10 min;
   —for Plt, Tp = 2 h.
   The observation period included that part of the whole operation cycle in which the EUT produces the most unfavorable sequence of voltage changes.

2.5.3 Measurement Data

For NLB200045W1U4S47

Maximum Flicker results			
	EUT values	Limit	Result
Pst	0.02	1.00	PASS
dc [%]	0.00	3.30	PASS
dmax [%]	0.01	4.00	PASS
dt [s]	0.00	0.50	PASS

For NLB070216W1U4S47

Maximum Flicker results			
	EUT values	Limit	Result
Pst	0.02	1.00	PASS
dc [%]	0.00	3.30	PASS
dmax [%]	0.01	4.00	PASS
dt [s]	0.00	0.50	PASS

For NLB063240W1U4S47

Maximum Flicker results			
	EUT values	Limit	Result
Pst	0.02	1.00	PASS
dc [%]	0.00	3.30	PASS
dmax [%]	0.01	4.00	PASS
dt [s]	0.00	0.50	PASS

Section 3 Immunity Test Results

3.1 Performance Criteria Description in Clause 4.2 of EN 61547

Criterion A:	During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
Criterion B:	During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
Criterion C:	During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test the lighting equipment is switched off. After half an hour it is switched on again. The lighting equipment shall start and operate as intended.

3.2 ESD

Test Requirement:	EN 61547
Test Method:	EN 61000-4-2
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-18
Criterion Required:	B
Discharge Impedance:	330Ω/ 150 pF
Discharge Voltage:	Air Discharge: 8 kV
	VCP, HCP: 4 kV
	Contact Discharge: 4 kV
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

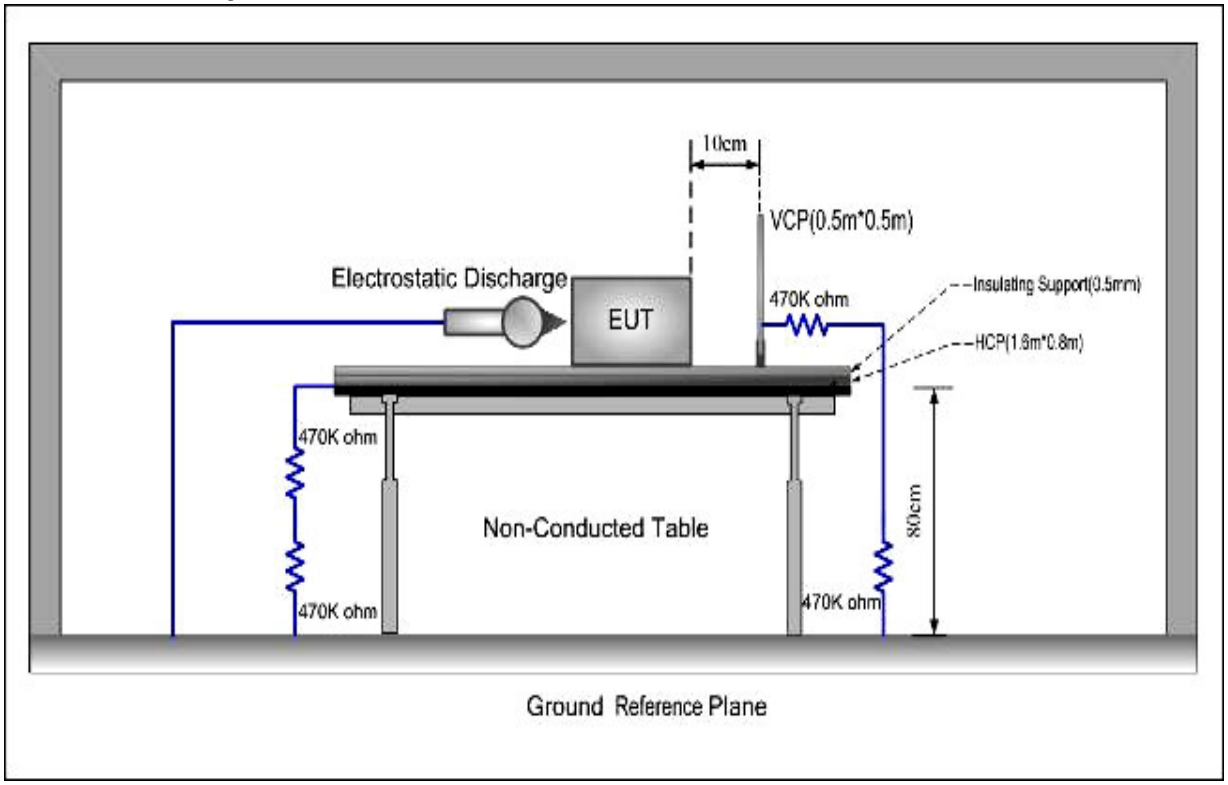
3.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 51 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.2.2 Test Setup and Procedure



1. Contact discharges to the conductive surfaces and to coupling planes:
   The EUT was exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points (a minimum of 50 discharges at each point). One of the test points was subjected to at least 50 indirect discharges (contact) to the centre of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points were available, then at least 200 indirect discharges were applied in the indirect mode. Tests were performed at a maximum repetition rate of one discharge per second.
   Air discharge at slots and apertures, and insulating surfaces:
   On those parts of the EUT where it was not possible to perform contact discharge testing, the equipment was investigated to identify user accessible points where breakdown may occur. This investigation was restricted to those areas normally handled by the user. A minimum of 10 single air discharges were applied to the selected test point for each such area.
   The application of electrostatic discharges to the contacts of open connectors was not required by this standard.
2. The EUT was put on a 0.8m high wooden table for table-top equipment or 0.1m high for floor standing equipment standing on the ground reference plane (GRP).
3. 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 while HCP were constructed from the same material type and thickness as that of the GRP, and connected to the GRP via a 470kΩresistor at each end. The distance between EUT and any of the other metallic surface excepted the GRP, HCP and VCP was greater than 1m.
4. During the contact discharges, the tip of the discharge electrode was touched 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.
5. After each discharge, the ESD generator was removed from the EUT, the generator was then retriggered for a new single discharge. For ungrounded product, a discharge cable with two resistances was used after each discharge to remove remnant electrostatic voltage. 10 times of each polarity single discharge were applied to HCP and VCP.

3.2.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

- **Direct Application Test Results**

Observations: Test Point: 1. All insulated enclosure & seams.
2. All accessible metal parts of the enclosure with discharge resistor used.

Direct Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Contact Discharge**	**Air Discharge**
8	+/-	1	N/A	A
4	+/-	2	A	N/A

- **Indirect Application Test Results**

Observations: Test Point: 1. All sides.

Indirect Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Horizontal Coupling**	**Vertical Coupling**
4	+/-	1	A	A

Remarks:

A: No degradation in the performance of the EUT was observed.

N/A: Not Applicable (not required by Standard).

The EUT does meet the Electric-Static Discharge requirements of Standard.

3.3 Radiated Immunity

Test Requirement:	EN 61547
Test Method:	EN 61000-4-3
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-21
Criterion Required:	A
Frequency Range:	80MHz to 1GHz
Antenna Polarization:	Horizontal & Vertical
Test level:	3 V/m on enclosure
Modulation:	80 %, 1 kHz Amplitude Modulation

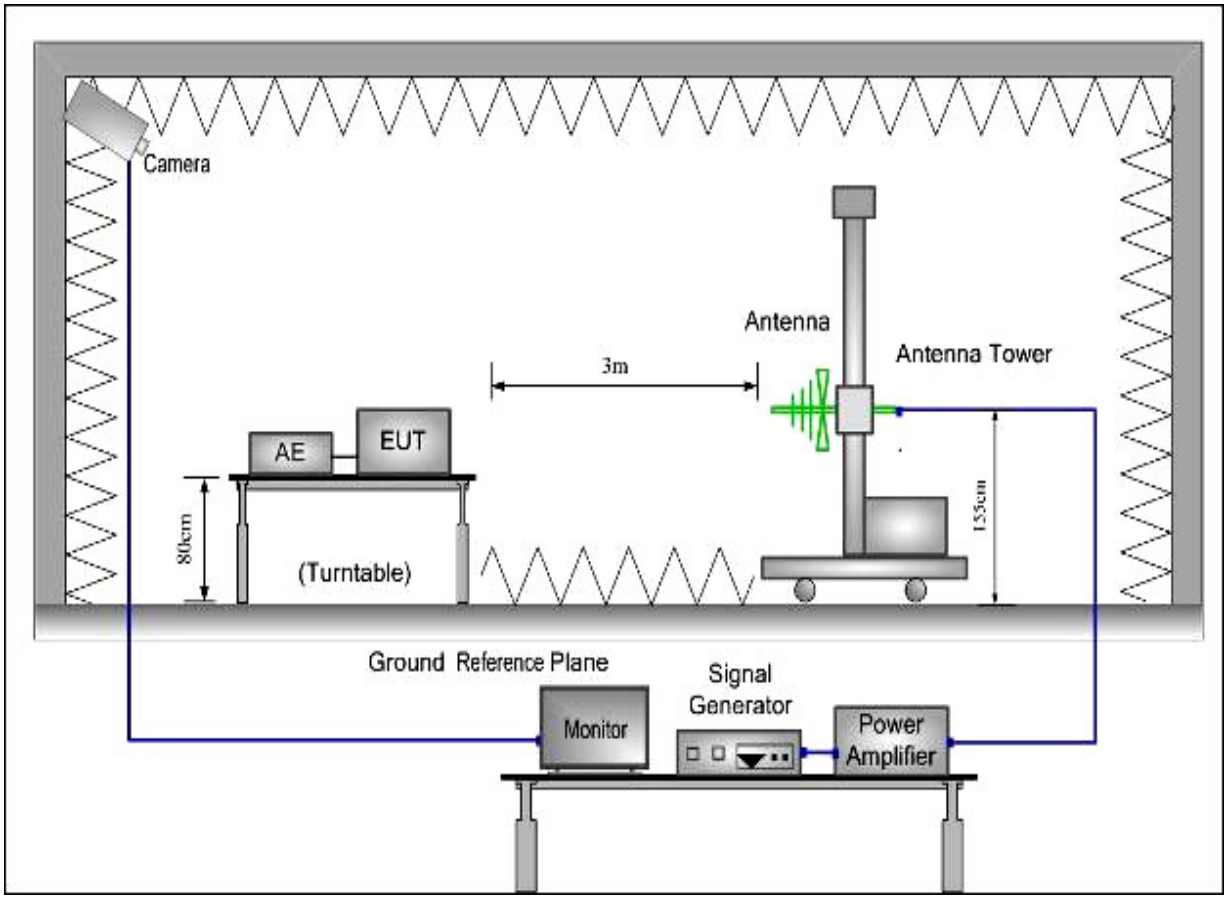
3.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 52 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.3.2 Test Setup and Procedure



1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items.
2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.
3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area).
4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Here the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value.
5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0.5 s.
6. The test normally was performed with the generating antenna facing each side of the EUT.
7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.
8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.

3.3.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Result / Observations
80 MHz-1 GHz	3 V/m	1 kHz, 80%Amp.Mod, 1% increment	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	N/A
			H		N/A
			V	Bottom	N/A
			H		N/A

Remarks:

Front: the front of the EUT faces to transmitting antenna (refer to Radiated Immunity test setup photo)

A: No degradation in the performance of the E.U.T. was observed.

N/A: not applicable

The EUT does meet the Radiated Immunity requirements of Standard.

3.4 Electrical Fast Transients (EFT)

Test Requirement:	EN 61547
Test Method:	EN 61000-4-4
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-23
Criterion Required:	B
Test Level:	1.0kV on AC
Polarity:	Positive & Negative
Repetition Frequency:	5kHz
Burst Duration:	300ms
Test Duration:	2 minute per level & polarity

3.4.1 E.U.T. Operation

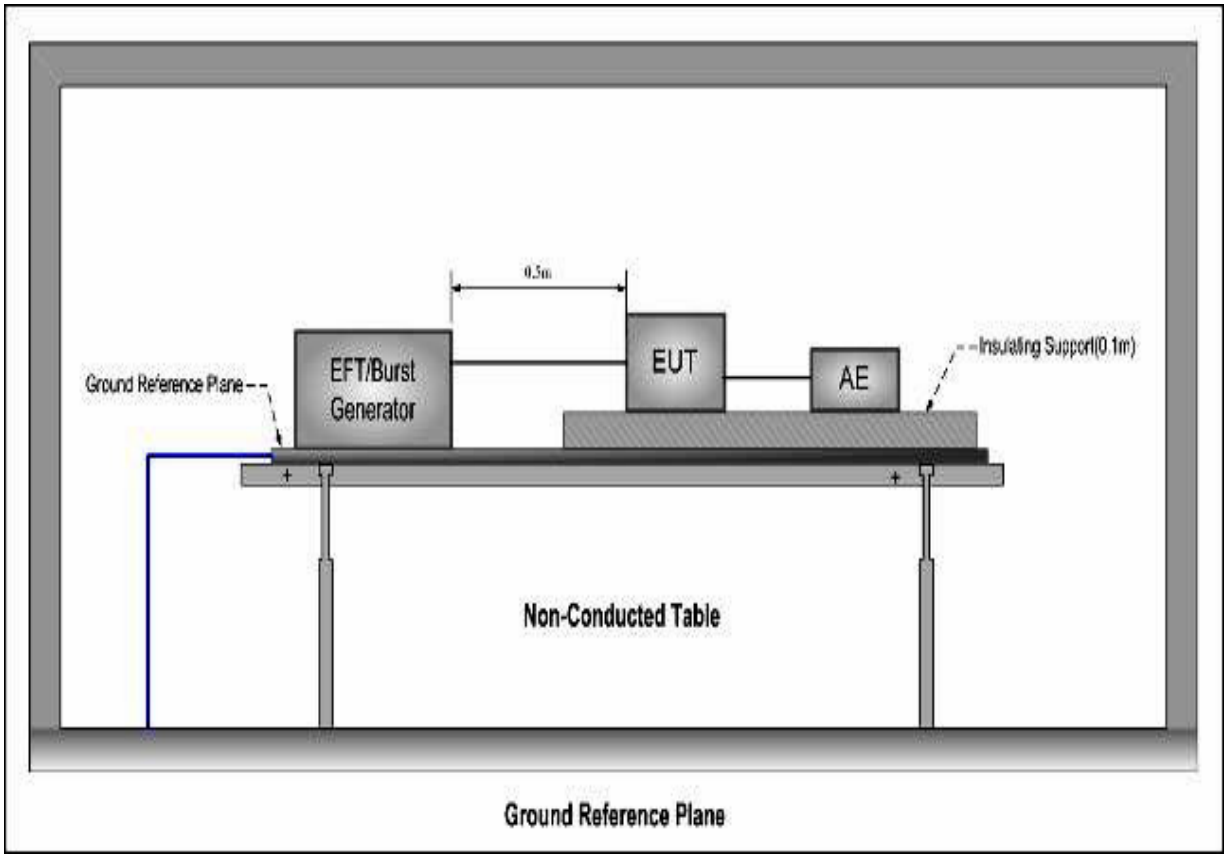
Operating Environment:

Temperature: 22.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.4.2 Test Setup and Procedure

For AC port:



1. The EUT was placed on a ground reference plane (GRP) insulated by an insulating support 0.1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The GRP shall project beyond the EUT and the clamp by at least 0.1m on all sides. The distance between the EUT and any other of the metallic surface except the GRP was greater than 0.5m. All cables to the EUT were placed on the insulation support 0.1m above GRP. Cables not subject to EFT were routed as far as possible from cable under test to minimize the coupling between the cables.
3. The length of signal and power cable between the EUT and EFT generator was 0.5m. If the cable is a non-detachable supply cable more than 0.5m, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0.1m above the GRP.
4. The EUT was conducted the below specified level voltage test for line to neutral or line to neutral to earth(for clamp coupling is for the signal line), 120 seconds duration.
5. If the equipment contains identical ports, only one was tested; multiconductor cables, such as a 50-pair telecommunication cable, were tested as a single cable. Cables did not be split or divided into groups of conductors for this test; interface ports, which were intended by the manufacturer to be connected to data cables not longer than 3 m, did not be tested.

3.4.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

Lead under Test	Level (±kV)	Coupling Direct/Clamp	EUT operating mode	Observations (Performance Criterion)
Live	±1.0	Direct	LED lighting mode	(A)
Neutral	±1.0	Direct	LED lighting mode	(A)
Live+ Neutral	±1.0	Direct	LED lighting mode	(A)

Remark:

A: No degradation in the performance of the E.U.T. was observed.

The EUT does meet the Electrical Fast Transients requirements of Standard.

3.5 Surge

Test Requirement:	EN 61547
Test Method:	EN 61000-4-5
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-29
Criterion Required:	C
Test Level:	±0.5 kV, Live to Neutral ±1.0 kV, C.M.(≤25W) ±1.0 kV, D.M Live to Neutral ±2.0 kV, C.M.(> 25W)
Polarity:	Positive & Negative
Generator source impedance:	2 Ω/12Ω
Trigger Mode:	Internal
No. of surges:	5 positive at 90°, 5 negative at 270°

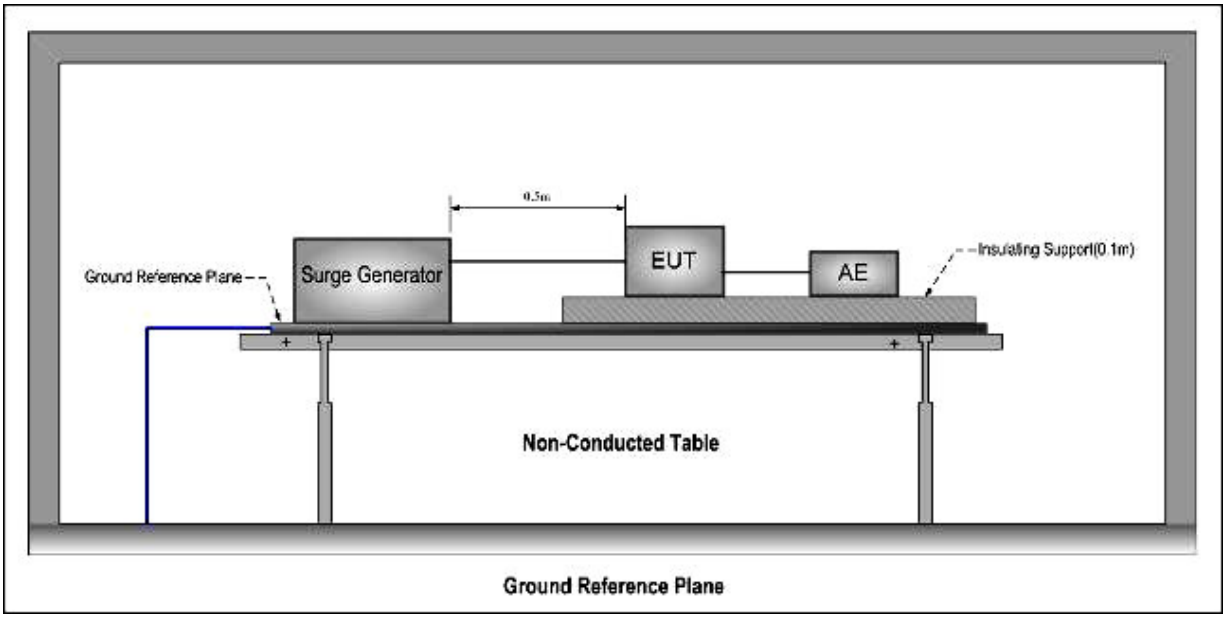
3.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 52 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.5.2 Test Setup and Procedure



1. The EUT was placed on a ground reference plane (GRP) insulated by an insulating support 0.1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The 1,2/50 μ s surge was to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks were 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 applied on the lines under test.
3. The power cord between the EUT and the coupling/decoupling network was not exceeding 2 m in length. The interconnection line between the EUT and the coupling/ decoupling network shall not exceed 2 m in length.
4. The EUT was conducted the below specified test voltages for line to line and line to neutral and line to earth and neutral to earth, five positive pulses at 90° and five negative pulses 270° for a.c. power ports and five positive pulses and five negative surge pulses for d.c. power ports. The test levels were applied on the EUT with a 2Ω generator source impedance for power supply terminals and 40 Ω output impedance for interconnection lines. The tests were done at repetition rate one per minute.

3.5.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

Pulse No	Coupling	Level (kV)	Surge Interval	Phase (deg)	Observation (Performance Criterion)
1-5	L-N	+0.5	60s	90°	(A)
6-10	L-N	-0.5	60s	270°	(A)

Remarks:

A: No degradation in the performance of the E.U.T. was observed.

The EUT does meet the Surge immunity on AC requirements of Standard.

3.6 Conducted Immunity 0.15 MHz to 80 MHz

Test Requirement:	EN 61547
Test Method:	EN 61000-4-6
Test Voltage:	AC 230V, 50Hz
Test Date:	2016-03-25
Criterion Required:	A
Frequency Range:	0.15MHz to 80MHz
Test level:	3V rms on AC Ports (unmodulated emf into 150Ω)
Modulation:	80%, 1kHz Amplitude Modulation

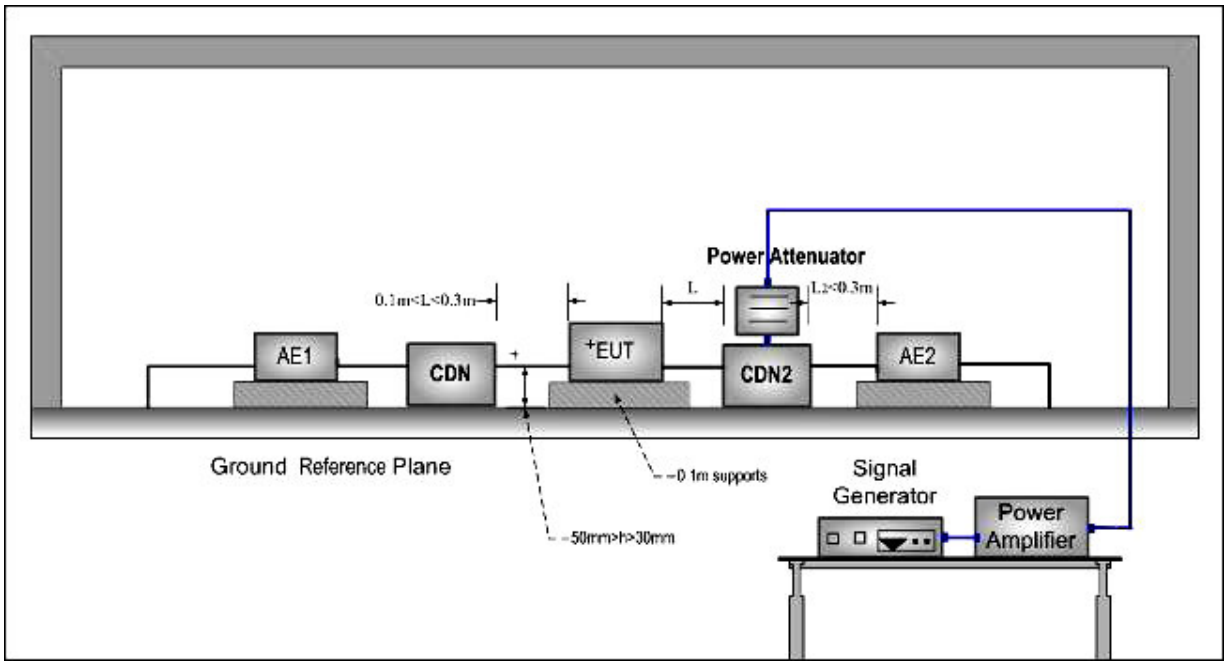
3.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.6.2 Test Setup and Procedure



1. 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 cables exiting the EUT was supported at a height of at least 30 mm above the ground reference plane.
2. The coupling and decoupling devices were required, they were located between 0.1 m and 0.3 m from the EUT. This distance was to be measured horizontally from the projection of the EUT on to the ground reference plane to the coupling and decoupling device.
3. Each AE, used with clamp injection, shall be placed on an insulating support 0.1 m above the ground reference plane. A decoupling network shall be installed on each cable between the EUT and AE except the cable under test. All cables connected to each AE, other than those being connected to the EUT, shall be provided with decoupling networks. The decoupling networks connected to each AE (except those on cables between the EUT and AE) shall be applied no further than 0.3 m from the AE. The cable(s) between the AE and the decoupling network (s) or in between the AE and the injection clamp shall not be bundled nor wrapped and shall be kept between 30 mm and 50 mm above the ground reference plane.
4. The frequency range was swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or to change coupling devices as necessary. Where the frequency was swept incrementally, the step size did not exceed 1 % of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency was not less than the time necessary for the EUT to be exercised and to respond, and was not less than 0.5 s.

3.6.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

Frequency	Line	Test Level	Modulation	Step Size	Observation (Performance Criterion)
150 kHz to 80 MHz	2 Wires AC Supply Cable	3 Vrms	80 %, 1 kHz Amp. Mod.	1%	(A)

Remarks:

A: No degradation in the performance of the E.U.T. was observed.

The EUT does meet the Conducted Immunity requirements of Standard.

3.7 Voltage Dips and Interruptions

Test Requirement:	EN 61547
Test Method:	EN 61000-4-11
Test Voltage:	100V/240V AC 50/60Hz
Test Date:	2016-04-01
Criterion Required:	70%VD:C, 0% VD: B;
Test level:	0% of U_T (Supply Voltage) for 0.5 Periods
	70% of U_T (Supply Voltage) for 10 Periods
No. of Dips / Interruptions:	3 per Level

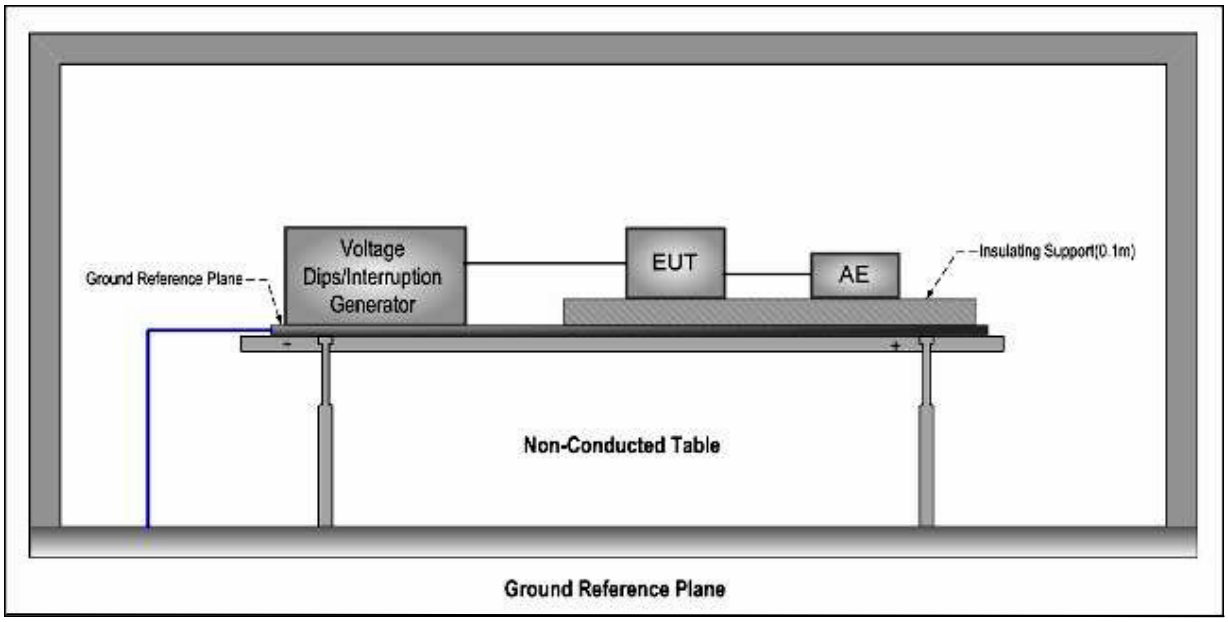
3.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: Full load working and Half load working.

3.7.2 Test Setup and Procedure



1. The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0,1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer.
3. The EUT was tested for each selected combination of test level and duration with a sequence of three dips /interruptions with intervals of 10s minimum. Each representative mode of operation was tested.
4. For EUT with more than one power cord, each power cord was tested individually.

3.7.3 Test Results

For NLB200045W1U4S47, NLB070216W1U4S47 and NLB063240W1U4S47

100V 50/60Hz

Test Level %U_T	Phase	Duration of drop out in Periods	No of drop out	Time between drop out	Observations (Performance Criterion)
0	0°	0.5	3	10s	A
70	0°	10	3	10s	B

240V 50/60Hz

Test Level %U_T	Phase	Duration of drop out in Periods	No of drop out	Time between drop out	Observations (Performance Criterion)
0	0°	0.5	3	10s	A
70	0°	10	3	10s	A

Remark:

$\mathbf{U_T}$ = the nominal supply voltage

A: No degradation in the performance of the EUT was observed.

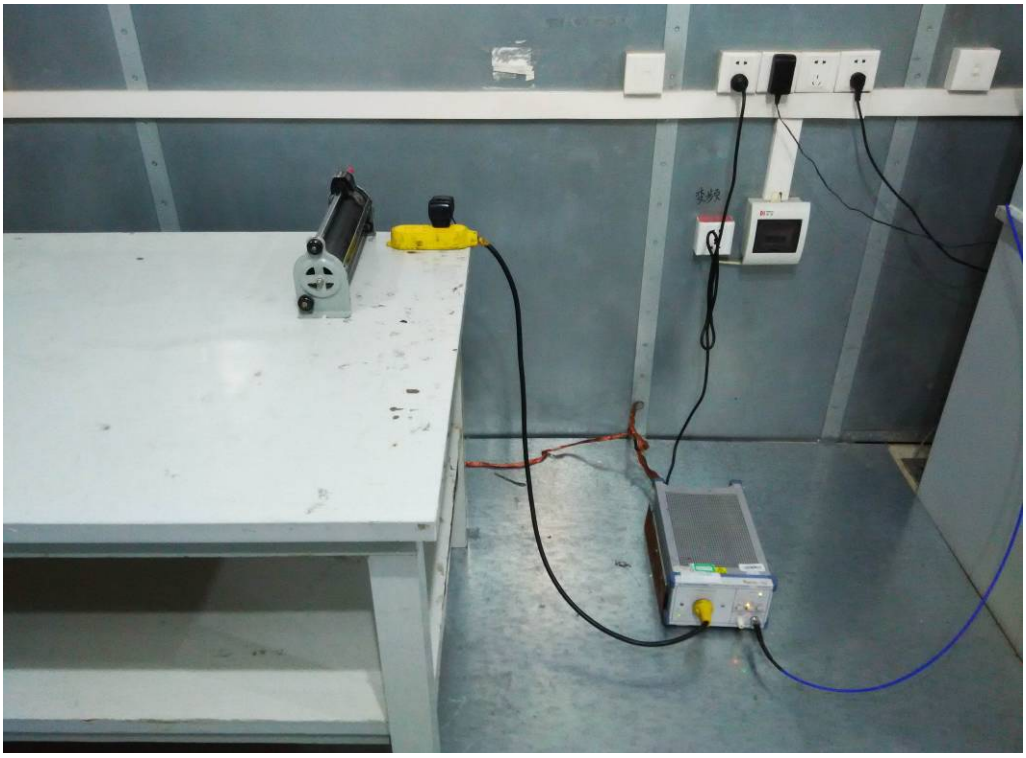
B: The EUT was shut down during test, however, it could recover by automatically after test.

Performance B is within the acceptable criterion for Voltage Dips and Interruption test.

The EUT does meet the Voltage Dips and Interruptions requirements of Standard.

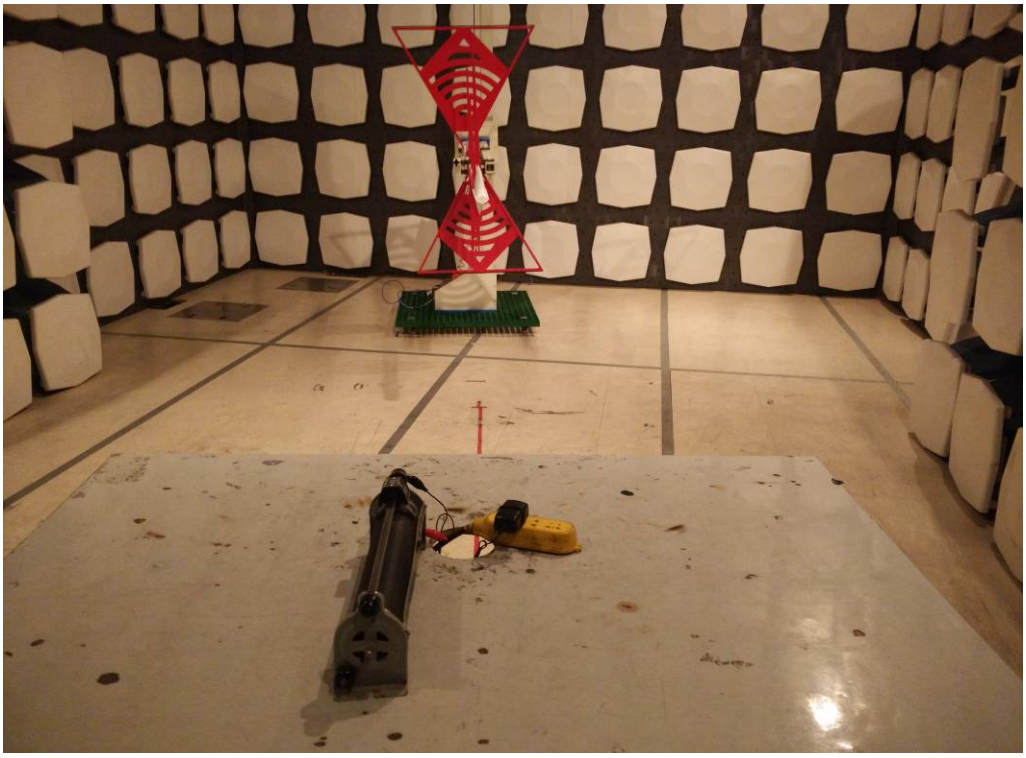
Section 4 Photographs

4.1 Conducted Emissions Mains Terminals Test Setup



4.2 Radiated Electromagnetic Disturbance Test Setup

4.3 Radiated Emission Test Setup



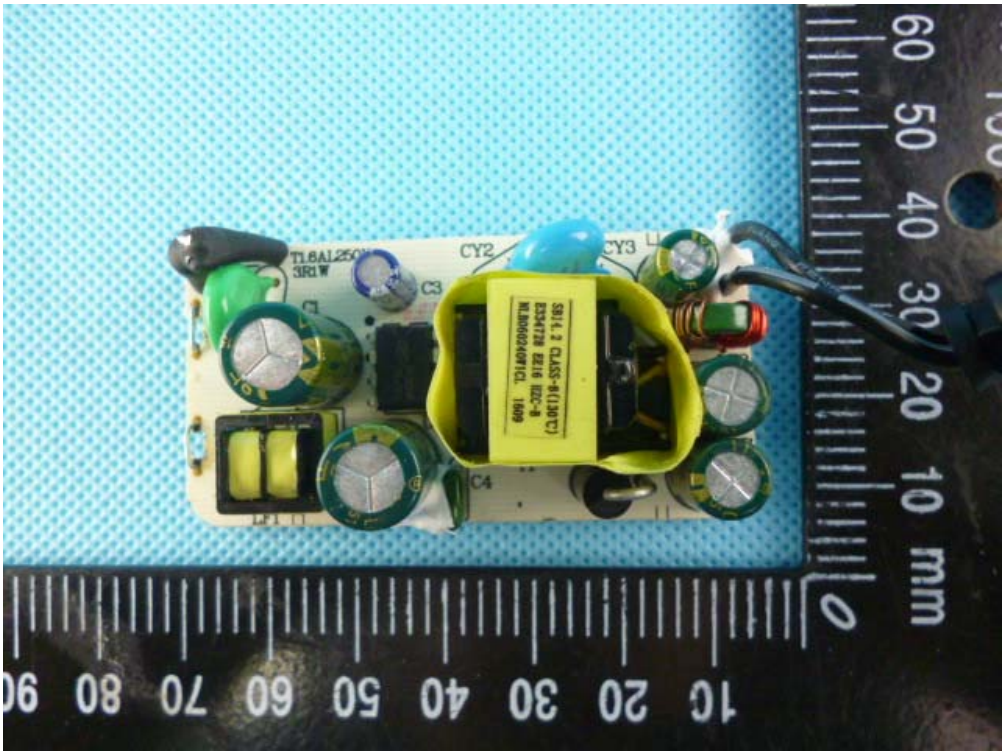
4.4 Harmonics and Flicker Test Setup

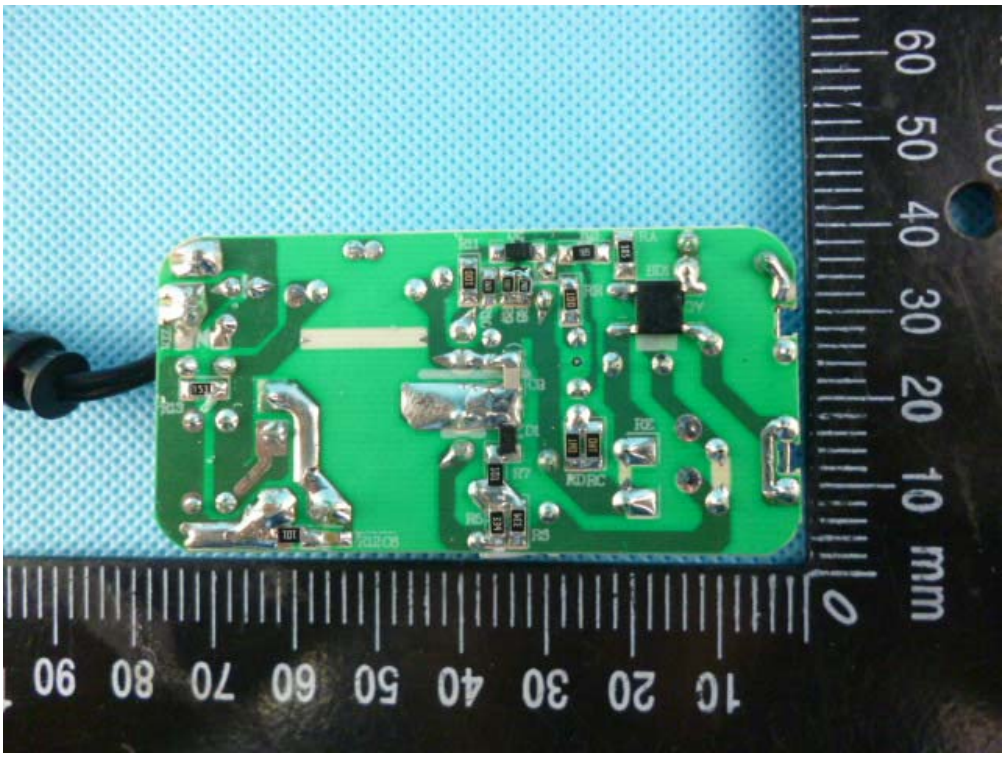
4.5 ESD Test Setup

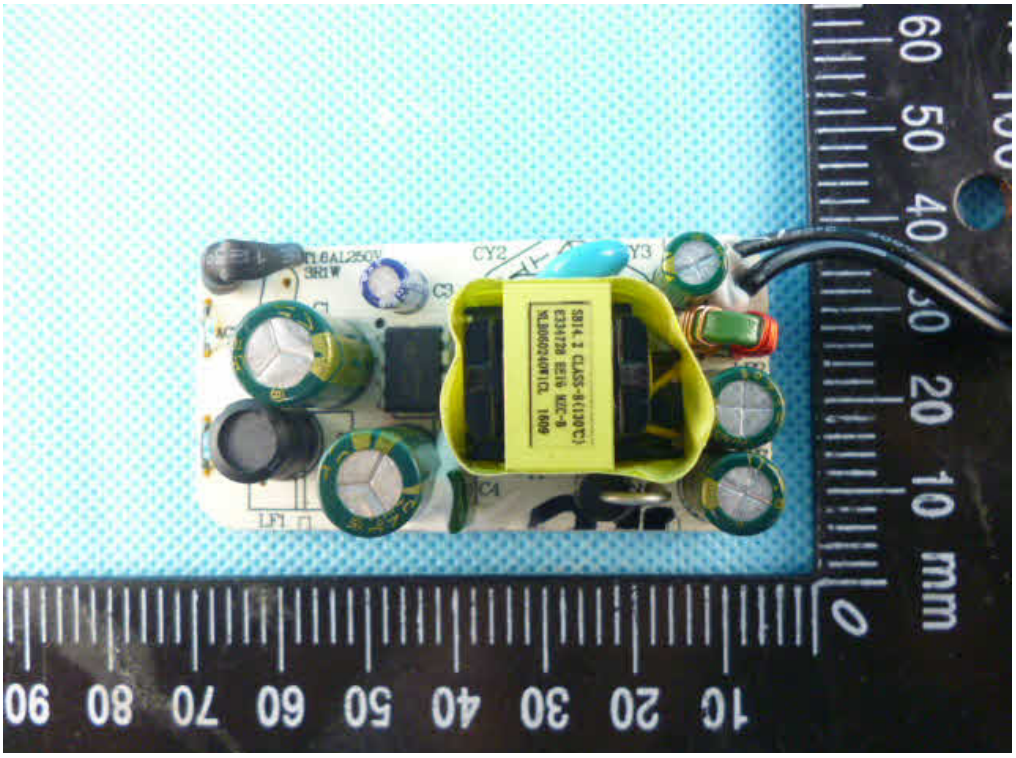
4.6 EFT, Surge, Voltage Dips and Interruptions on AC Test Setup

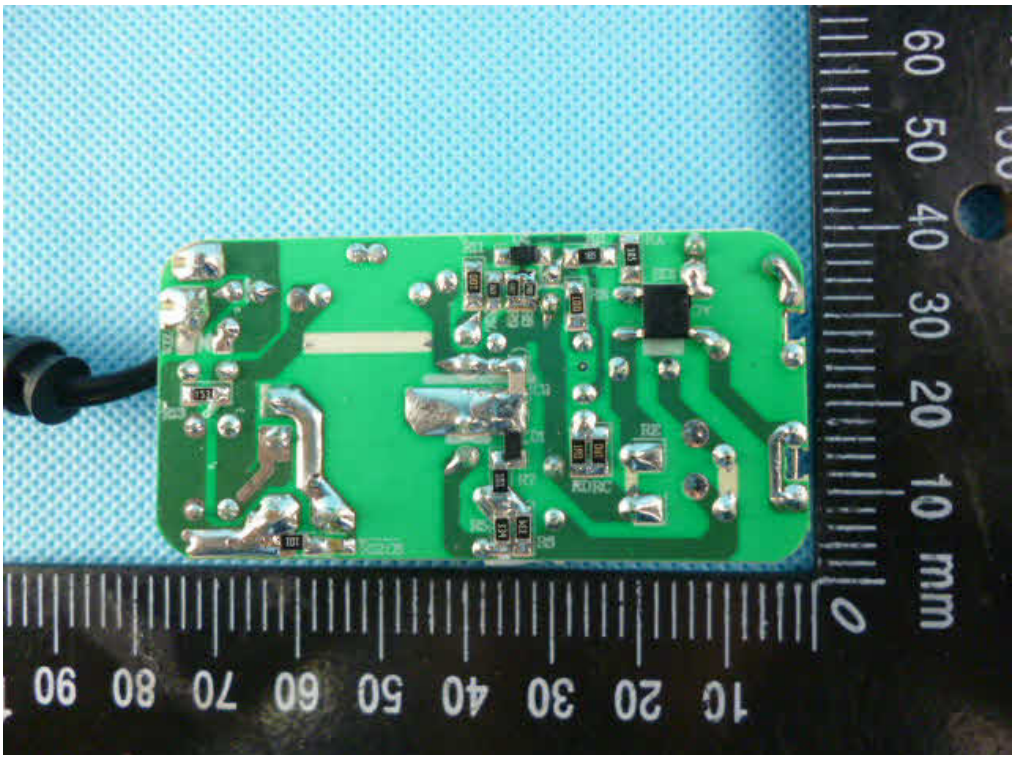
4.7 CS Test Setup

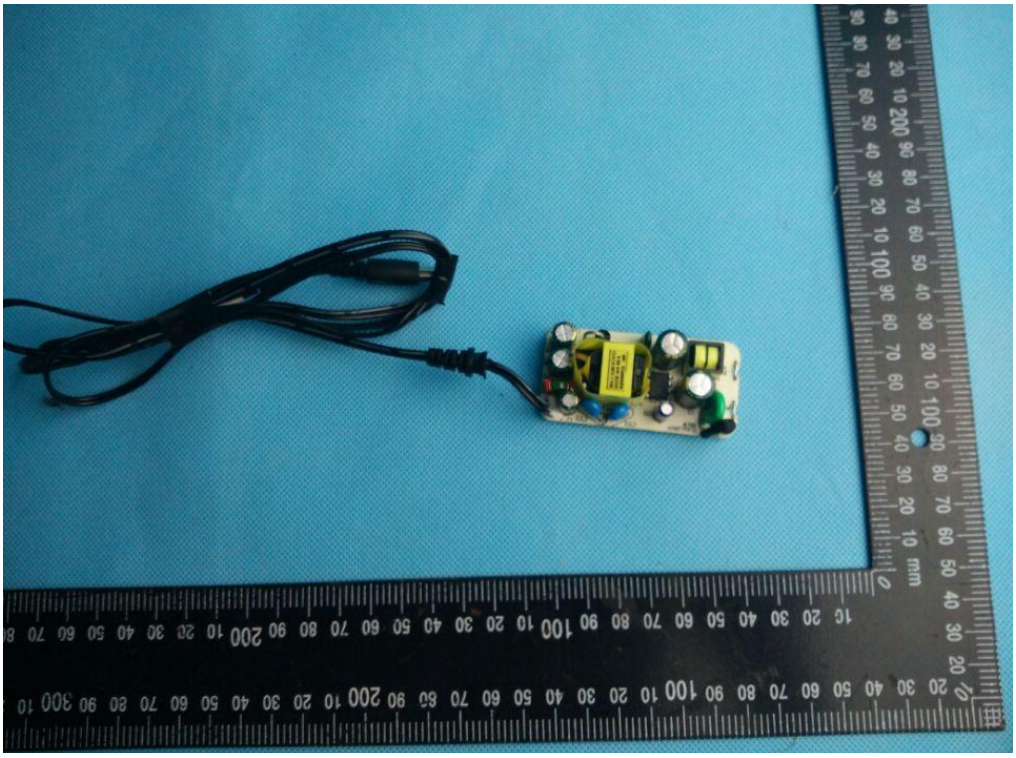
4.8 EUT Constructional Details

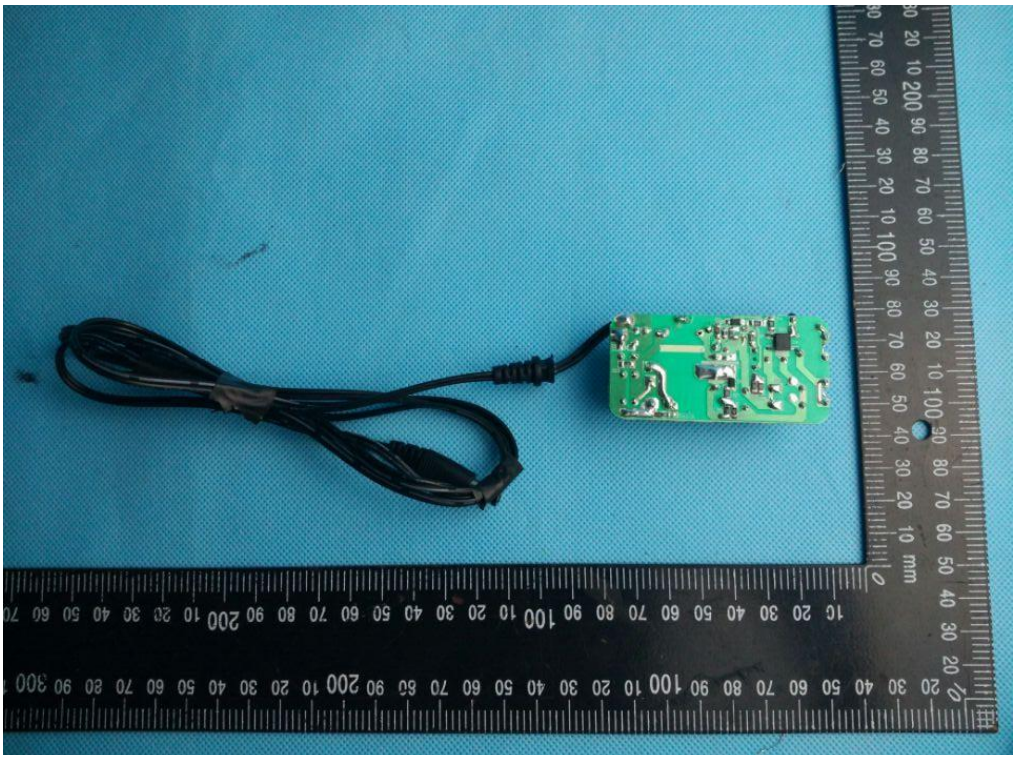


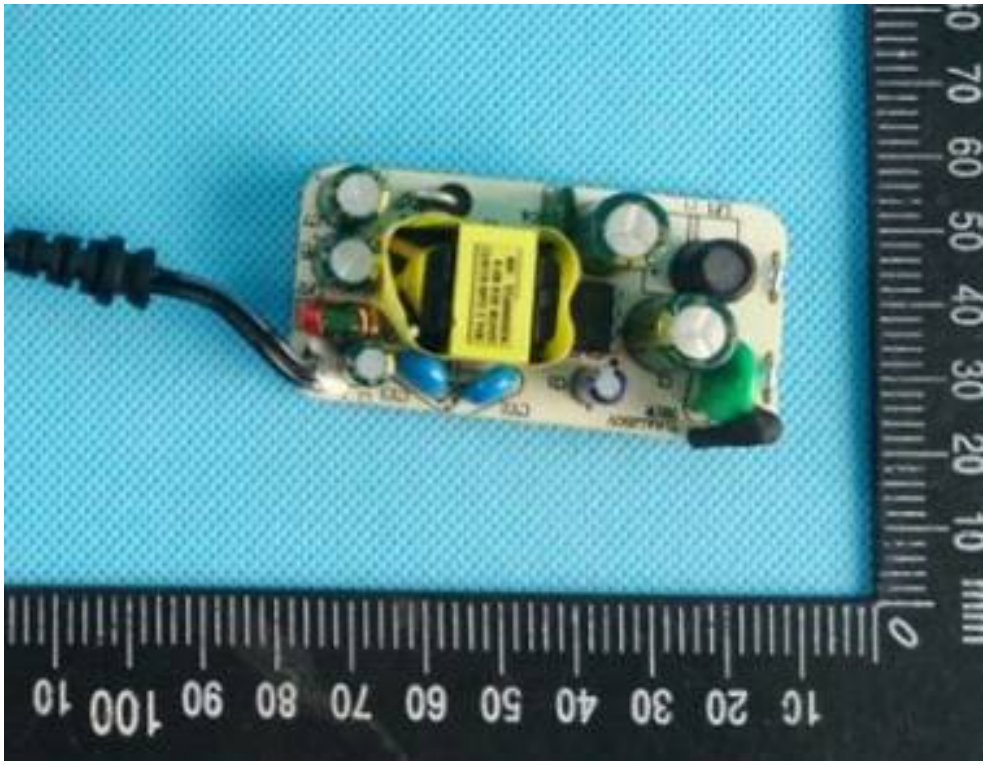


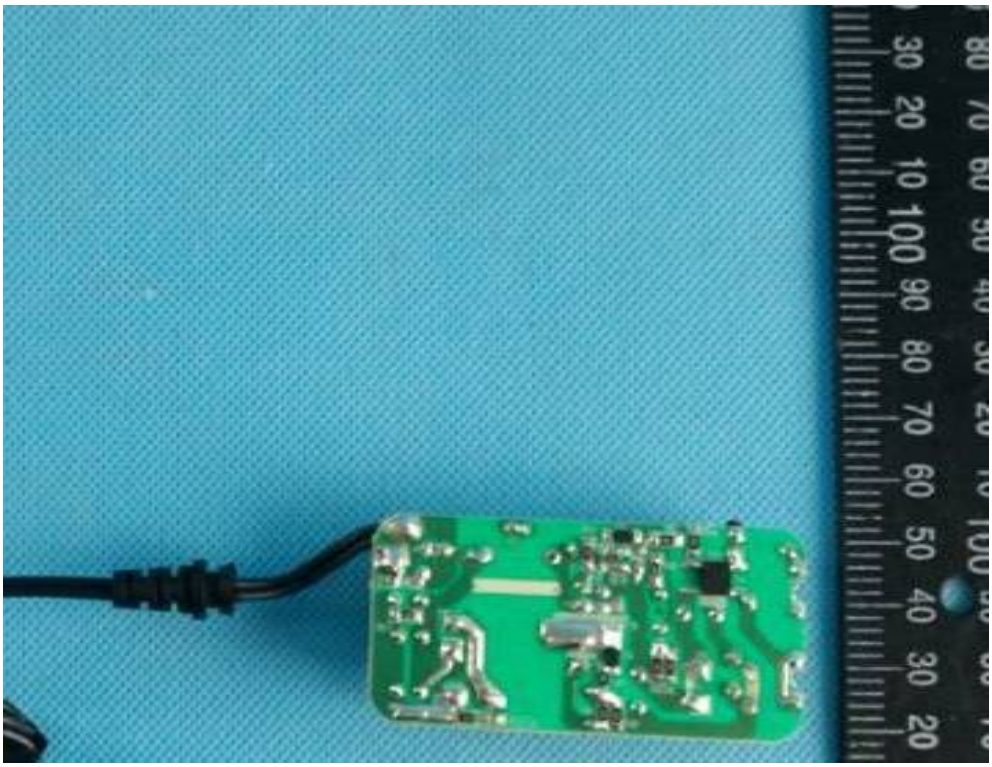












END OF THE TEST REPORT