

Touchstone Home Products, Inc.

EMC TEST REPORT

Report Type:

FCC Part 15B EMC report

Model:

86273/86275/WLGN8740 /86274/80013

80047/80048/86271/86272/80001

80002/80008/80026/80019

REPORT NUMBER:

230100865SHA-001

ISSUE DATE:

February 11, 2023

DOCUMENT CONTROL NUMBER:

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TEST REPORT

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Report no.: 230100865SHA-001

Applicant: Touchstone Home Products, Inc.
208 Philips Road Exton, PA, 19341, UNITED STATES

Manufacturer: Ningbo Gengmei Electric Appliance Tech Co.,Ltd
Guangxi Industrial Estate ,Yinjiang Town,Haishu District,Ningbo,China

FCC ID: 2A9RB-TSPUSFGM14

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

47CFR Part 15 (2020): Radio Frequency Devices (Subpart B)

ANSI C63.4 (2014): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

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TEST REPORT**Revision History**

Report No.	Version	Description	Issued Date
230100865SHA-001	Rev. 01	Initial issue of report	February 11, 2023

TEST REPORT**Measurement result summary**

TEST ITEM	FCC REFERENCE	RESULT
Power line conducted emission	15.107	Pass
Radiated emission	15.109	Pass

Notes: 1: NA =Not Applicable

2: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

3: Additions, Deviations and Exclusions from Standards: None.

TEST REPORT**1 GENERAL INFORMATION****1.1 Description of Equipment Under Test (EUT)**

Product name:	Electric fireplace
Type/Model:	86273, 86275, WLGN8740, 86274, 80013, 80047, 80048, 86271, 86272, 80001, 80002, 80008, 80026, 80019,
Description of EUT:	<p>The products covered by this report are household and indoor use electric fireplaces, provided with permanently attached flexible power supply cord which is terminated in a recognized mold on grounding plug.</p> <p>The WIFI and Bluetooth module has been approved with FCC ID: 2ANDL-WBR2. All models are same except for the appearance. we test WLGN8740 as representative and list the worst results in this report.</p>
Rating:	120V,60Hz,1500W
Category of EUT:	Class B
EUT type:	<input type="checkbox"/> Tabletop <input checked="" type="checkbox"/> Floor standing
Highest operating frequency	2462MHz
Software Version:	/
Hardware Version:	/
Sample received date:	December 25, 2022
Date of test:	December 25, 2022 ~December 30, 2022

TEST REPORT**1.2 Description of Test Facility**

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

TEST REPORT**2 TEST SPECIFICATIONS****2.1 Standards or specification**

47CFR Part 15 (2020)

ANSI C63.4 (2014)

2.2 Mode of operation during the test

Within this test report, EUT was tested under all available operation modes and tested under its rating voltage and frequency. Other voltage and frequency is specified if used.

2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	SKET Auto EMC Test Software	Keleto	V3.0
Radiated emission	SKET Auto EMC Test Software	Keleto	V3.0

2.4 Test peripherals list

Item No.	Name	Band and Model	Description

2.5 Test environment condition:

Test items	Temperature	Humidity
Power line conducted emission	23°C	53% RH
Radiated Emissions	23°C	55% RH

TEST REPORT
2.6 Instrument list

Conducted Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESCS 30	EC 2107	2023-07-07
<input checked="" type="checkbox"/>	A.M.N.	R&S	ESH2-Z5	EC 3119	2023-11-08
<input checked="" type="checkbox"/>	Shielded room	Zhongyu	-	EC 2838	2024-01-10

Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESIB 26	EC 3045	2023-09-15
<input checked="" type="checkbox"/>	Bilog Antenna	TESEQ	CBL 6112D	EC 4206	2023-09-24
<input checked="" type="checkbox"/>	Horn antenna	R&S	HF 906	EC 3049	2024-01-16
<input checked="" type="checkbox"/>	Pre-amplifier	R&S	Pre-amp 18	EC5262	2023-06-09
<input checked="" type="checkbox"/>	Semi-anechoic chamber	Albatross project	-	EC 3048	2023-07-13

Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3783	2023-03-02
<input checked="" type="checkbox"/>	Pressure meter	YM3	Shanghai Mengde	EC 4620	2023-09-08

TEST REPORT**2.7 Measurement uncertainty**

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Radiated Emissions in restricted frequency bands below 1GHz	± 4.90dB
Radiated Emissions in restricted frequency bands above 1GHz	± 5.02dB
Power line conducted emission	± 3.19dB

TEST REPORT**3 Radiated Emissions****Test result:** **Pass****3.1 Limit****3.1.1 Limits for radiated disturbance of class A device**

Frequency (MHz)	Permitted limit in dB μ V/m (Quasi-peak) of Measurement Distance 10m
30 – 88	39
88 – 216	43.5
216 – 960	46.4
Above 960	49.5

Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

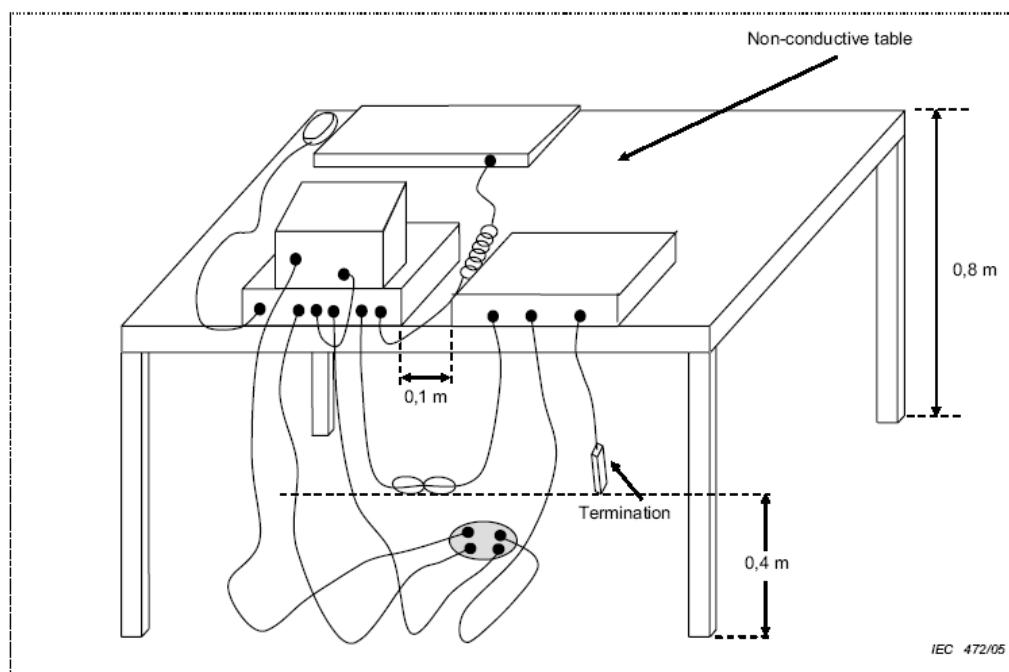
3.1.2 Limits for radiated disturbance of class B device

Frequency (MHz)	Permitted limit in dB μ V/m (Quasi-peak) of Measurement Distance 3m
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
Above 960	54.0

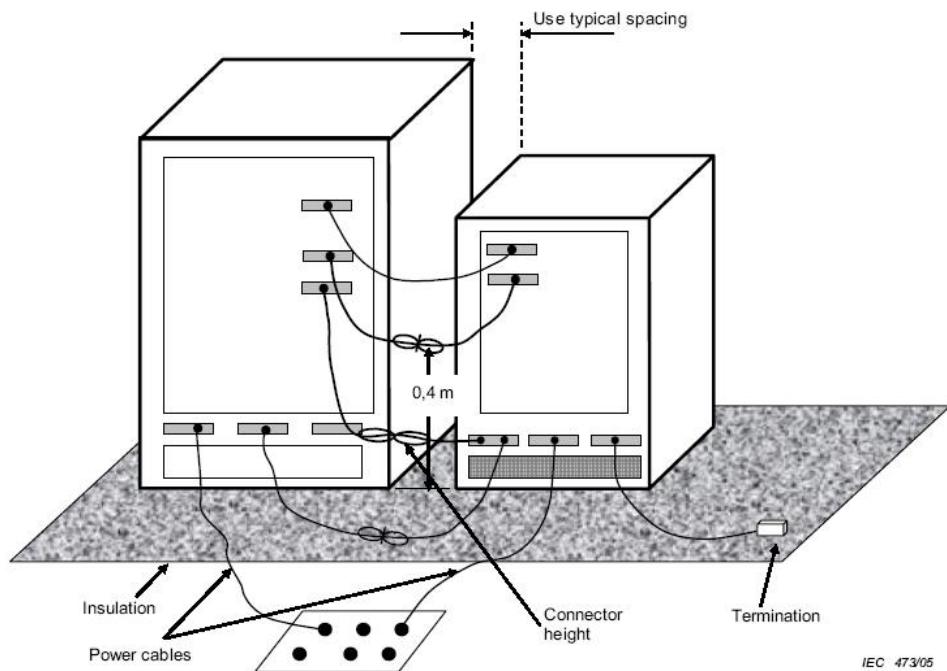
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

TEST REPORT**3.2 Block diagram and test set up**

For table top equipment



For floor standing equipment



TEST REPORT**3.3 Measurement Procedure**

The measurement was performed in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, the pre-amplifier (and high pass filter if necessary) is equipped just at the output terminal of the antenna.

The distance from EUT to receiving antenna is **3** meters.

Measurement was performed according to clause 4 and clause 5 of ANSI 63.4.

Test procedure was according to clause 8.3 of ANSI 63.4.

EUT arrangement and operate condition were according to clause 6 and clause 8 of ANSI 63.4.

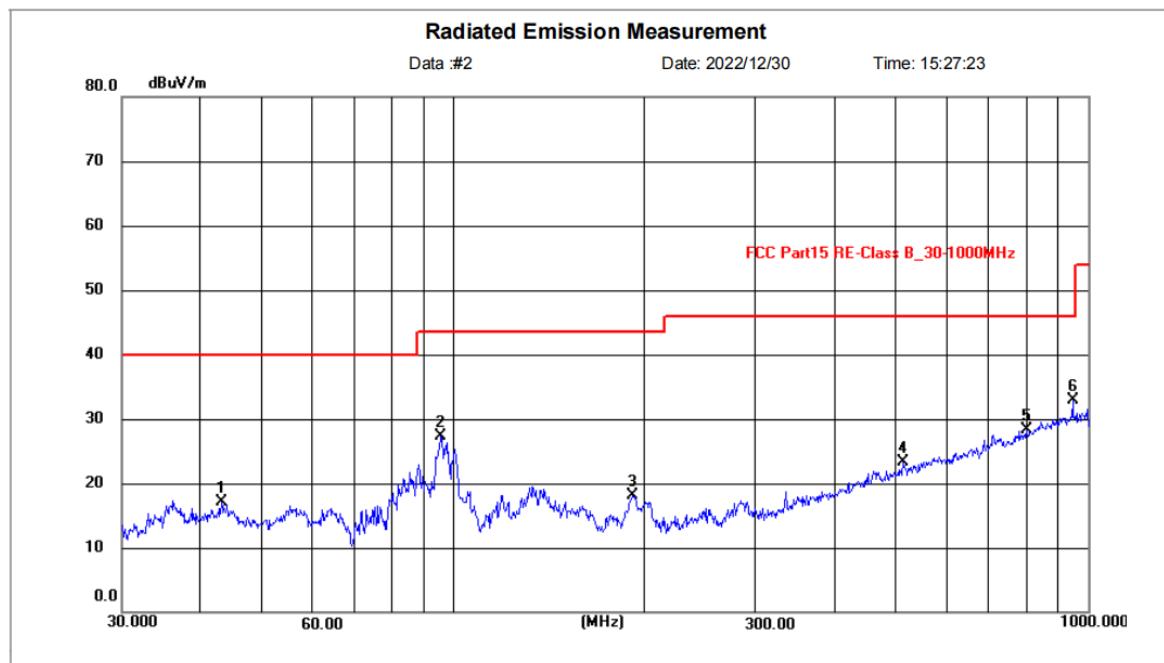
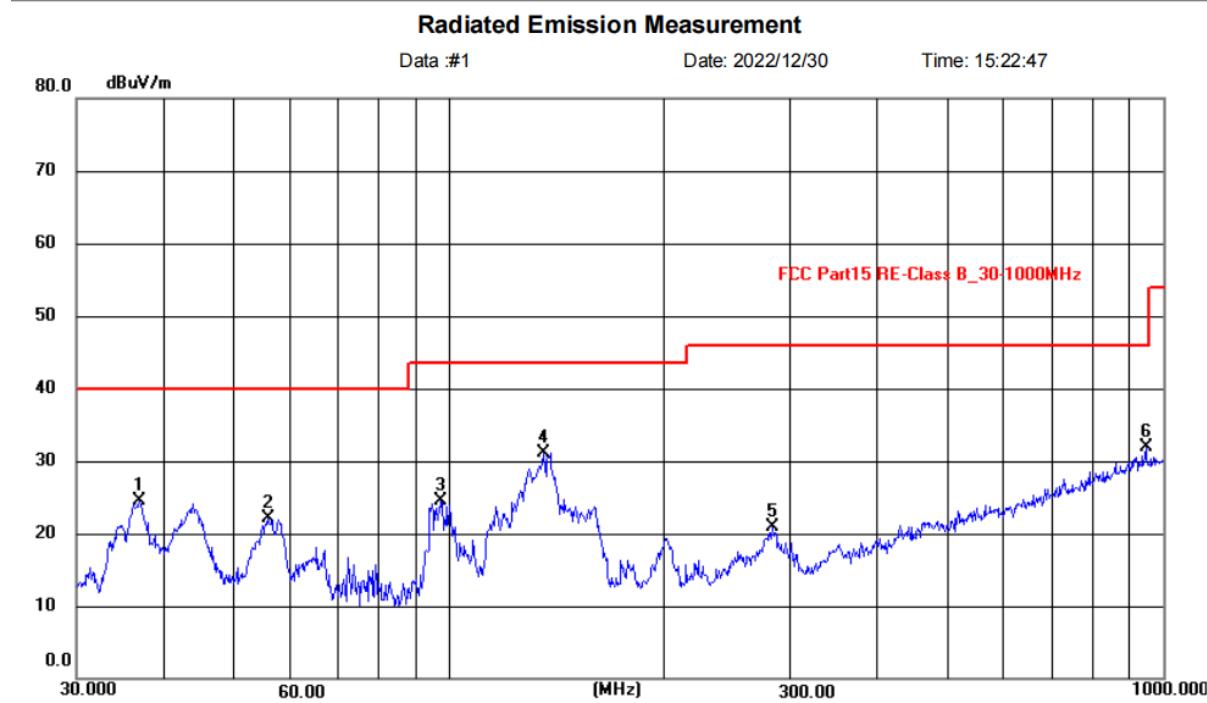
The radiated emission was measured using the test receiver with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)

RBW = 1MHz, VBW = 3MHz (>1GHz for PK)

Highest internal frequency (Fx)	Highest measured frequency F_M for radiated measurement	Measured Bandwidth
$F_x \leq 108 \text{ MHz}$	1 GHz	120kHz
$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	2 GHz	1MHz
$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	5 GHz	1MHz
$F_x > 1 \text{ GHz}$	$5 \times F_x$ up to a maximum of 40 GHz	1MHz

Note: 1. Fx is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.

TEST REPORT**3.4 Test Results of Radiated Emissions****Horizontal****Vertical**

TEST REPORT
Test data 30MHz~1GHz:

Polarization	Frequency (MHz)	Corrected Reading (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector
H	43.06	17.18	40.00	22.82	PK
	95.62	27.37	43.50	16.13	PK
	191.71	18.19	43.50	25.31	PK
	510.49	23.24	46.00	22.76	PK
	799.68	28.33	46.00	17.67	PK
	948.59	32.96	46.00	13.04	PK
V	36.85	24.53	40.00	15.47	PK
	55.71	22.09	40.00	17.91	PK
	97.21	24.42	43.50	19.08	PK
	135.72	31.10	43.50	12.40	PK
	283.68	20.87	46.00	25.13	PK
	948.59	31.95	46.00	14.05	PK

Test data of 1G~25GHz:

Antenna Polarization	Frequency (MHz)	Corrected Reading (dB μ V/m)	Limit (dB μ V/m)	Margin	Detector
H	1000.00	*	74.00	*	PK
	5000.00	*	74.00	*	PK
	10000.00	*	74.00	*	PK
	15000.00	*	74.00	*	PK
	20000.00	*	74.00	*	PK
	25000.00	*	74.00	*	PK
V	1000.00	*	74.00	*	PK
	5000.00	*	74.00	*	PK
	10000.00	*	74.00	*	PK
	15000.00	*	74.00	*	PK
	20000.00	*	74.00	*	PK
	25000.00	*	74.00	*	PK

Note: * means the emission level is 20dB or more lower than the relevant limit.

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz)

2. Corrected Reading = Original Receiver Reading + Correct Factor

3. Margin = Limit - Corrected Reading

4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,

Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dB μ V, limit = 40.00dB μ V/m.

Then Correct Factor = $30.20 + 2.00 - 32.00 = 0.20$ dB/m; Corrected Reading = $10.00 + 0.20 = 10.20$ dB μ V/m;

Margin = $40.00 - 10.20 = 29.80$ dB.

TEST REPORT**4 Power line conducted emission****Test result:** **Pass****4.1 Limit****4.1.1 Limits for conducted disturbance voltage at the mains ports of class A device**

Frequency range (MHz)	Limits dB(µV)	
	Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

Note: If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.

4.1.2 Limits for conducted disturbance voltage at the mains ports of class B device

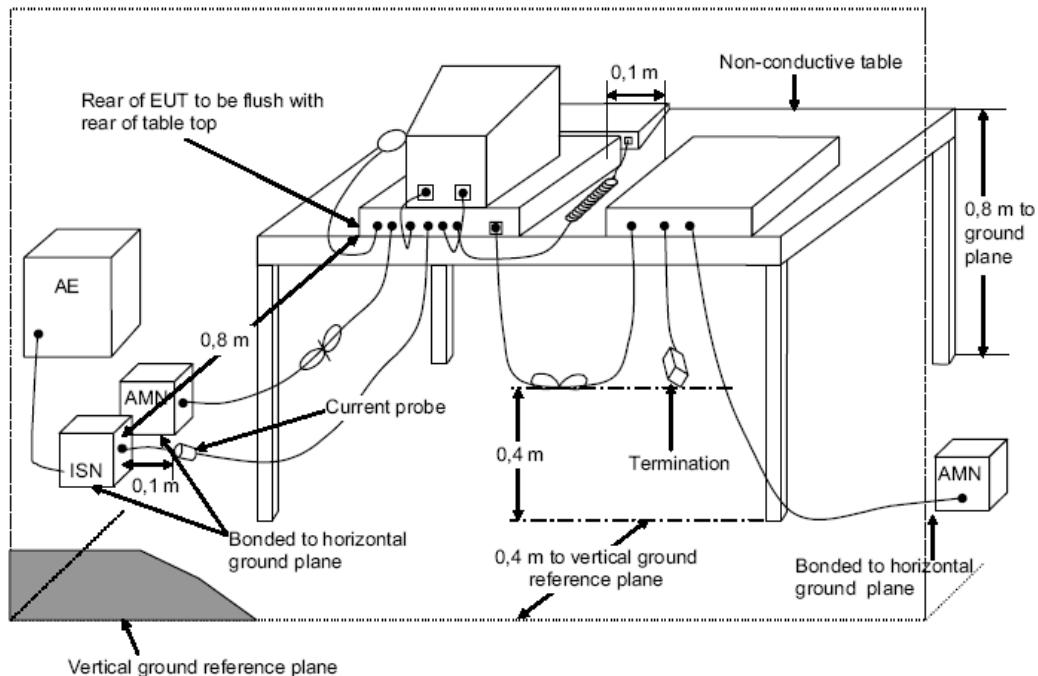
Frequency range (MHz)	Limits dB(µV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 ~ 56 *	56 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

Note: 1. * Means the limit decreasing linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz
2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.

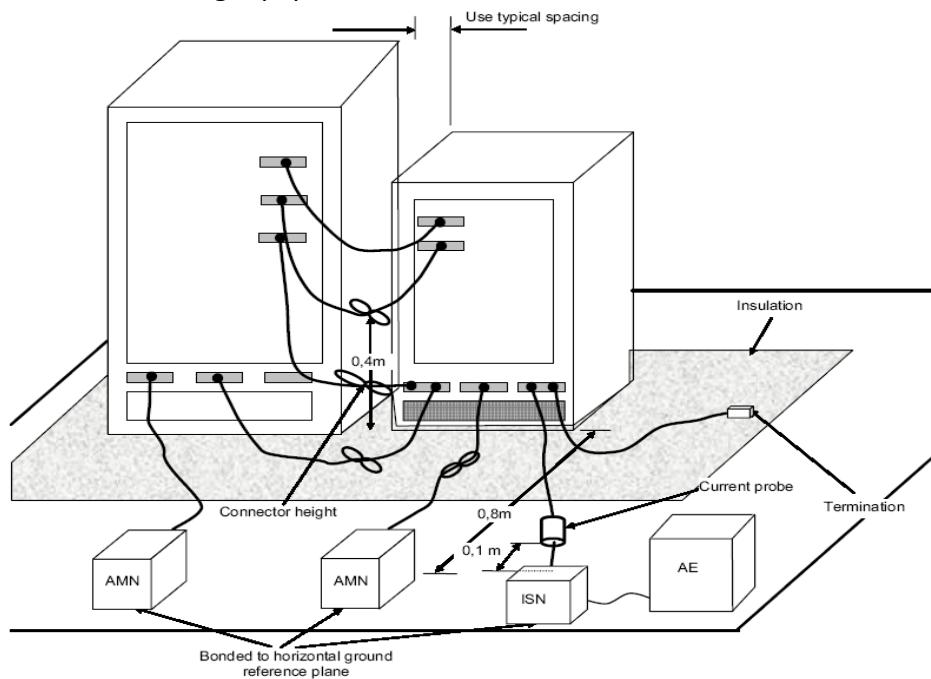
TEST REPORT

4.2 Block diagram and test set up

For table top equipment



For floor standing equipment

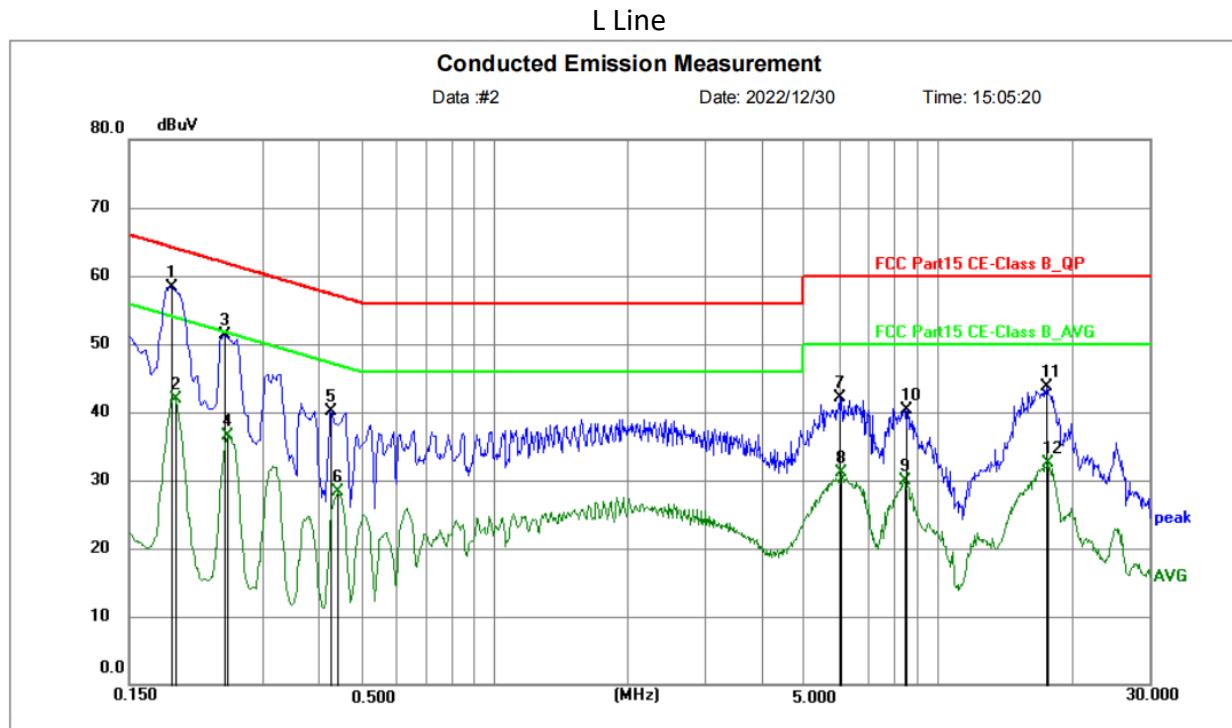


TEST REPORT**4.3 Measurement Procedure**

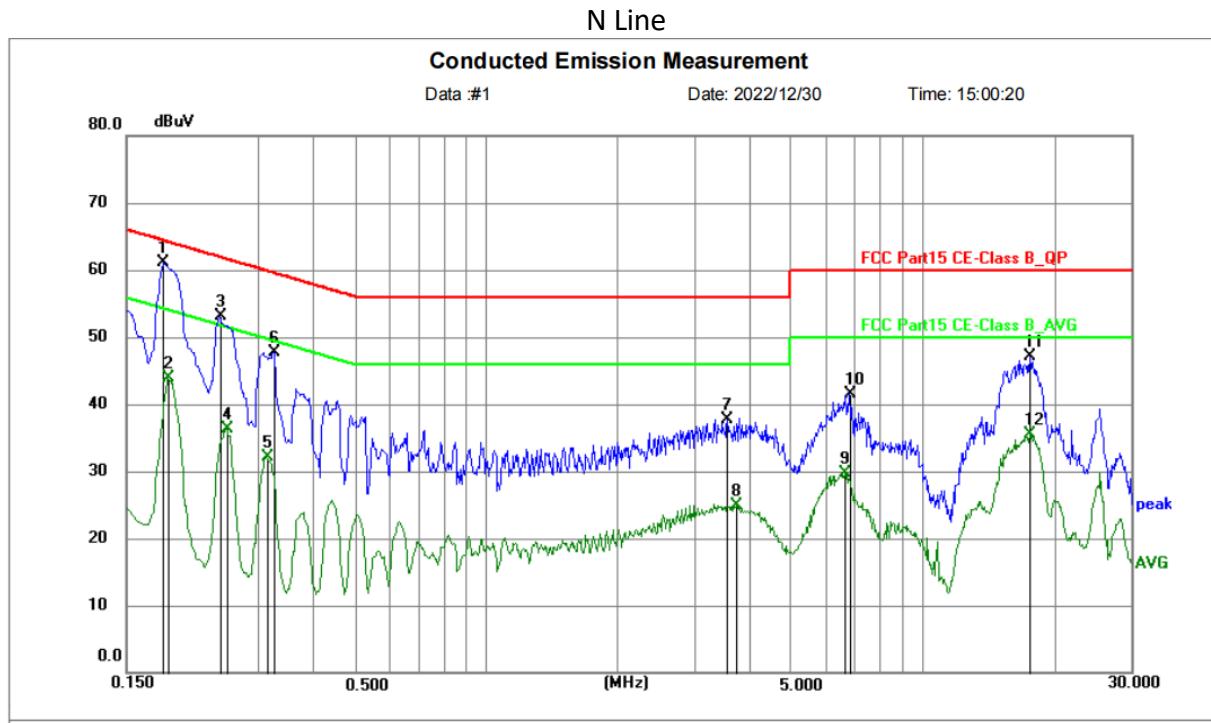
Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

TEST REPORT
4.4 Test Results of Power line conducted emission
Test Curve:

Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(µV)	Limit dB(µV)	Margin (dB)	level dB(µV)	limit dB(µV)	Margin (dB)
0.1860	58.36	64.21	-5.85	/	/	/
0.1905	/	/	/	41.98	54.01	-12.03
0.2445	51.39	61.94	-10.55	/	/	/
0.2490	/	/	/	36.45	51.79	-15.34
0.4245	40.01	57.36	-17.35	/	/	/
0.4425	/	/	/	28.29	47.01	-18.72
5.9945	42.13	60.00	-17.87	/	/	/
6.0575	/	/	/	31.06	50.00	-18.94
8.3705	/	/	/	29.92	50.00	-20.08
8.5010	40.40	60.00	-19.60	/	/	/
17.6140	43.75	60.00	-16.25	/	/	/
17.6680	/	/	/	32.56	50.00	-17.44

TEST REPORT
Test Curve:

Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.1815	61.12	64.42	-3.30	/	/	/
0.1860	/	/	/	43.91	54.21	-10.30
0.2445	53.01	61.94	-8.93	/	/	/
0.2535	/	/	/	36.34	51.64	-15.30
0.3120	/	/	/	32.05	49.92	-17.87
0.3255	47.69	59.57	-11.88	/	/	/
3.5745	37.79	56.00	-18.21	/	/	/
3.7500	/	/	/	24.83	46.00	-21.17
6.6425	/	/	/	29.78	50.00	-20.22
6.7730	41.42	60.00	-18.58	/	/	/
17.5869	47.13	60.00	-12.87	/	/	/
17.5869	/	/	/	35.53	50.00	-14.47

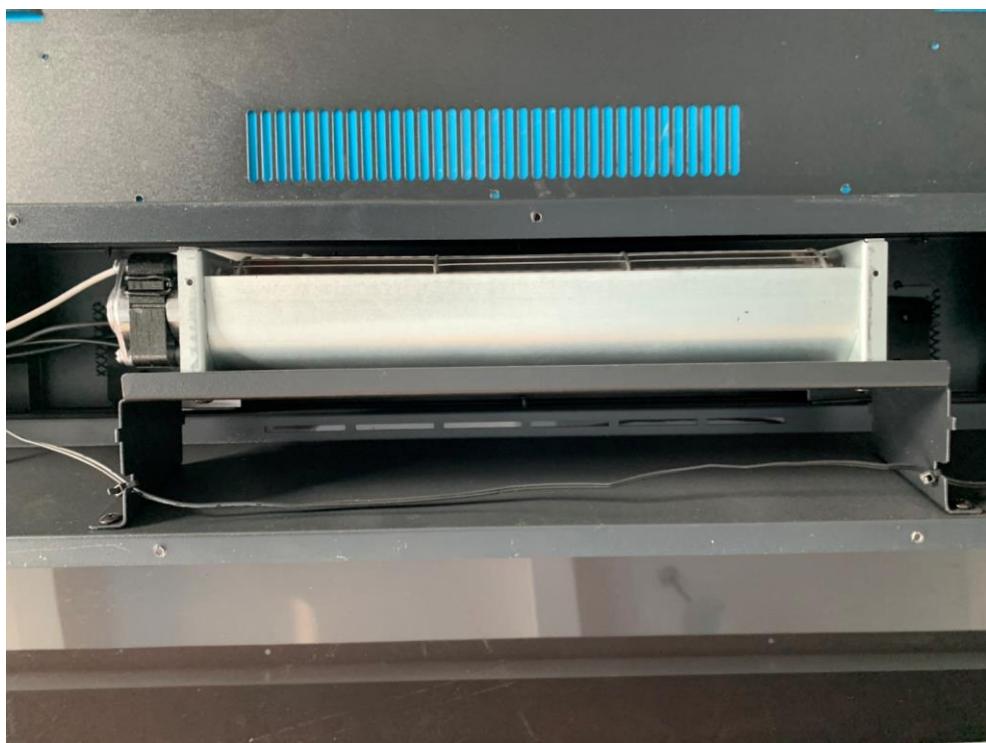
Remark:

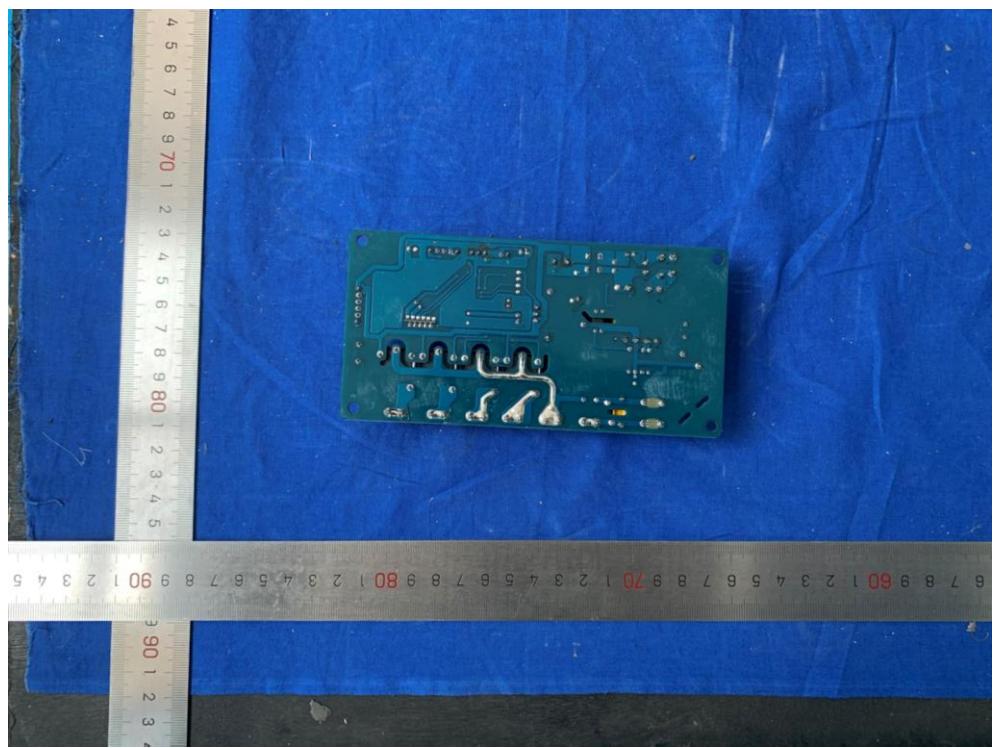
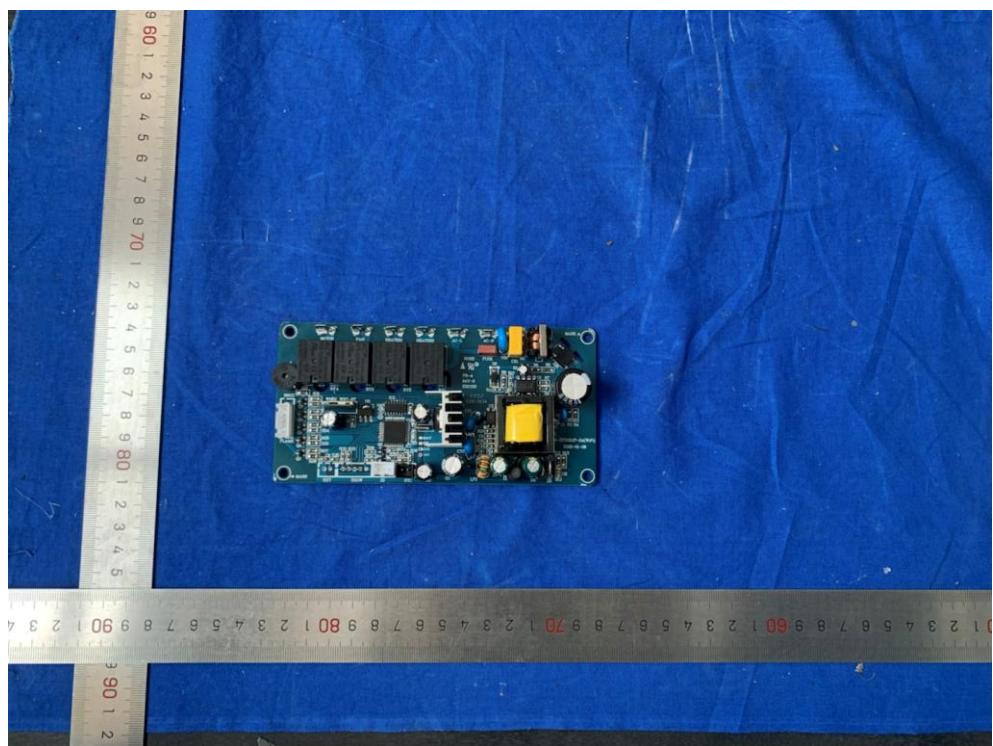
1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin =Level- Limit
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

TEST REPORT**Appendix I: Photograph of equipment under test**

WLGN8740



TEST REPORT

TEST REPORT

TEST REPORT

80001,86271



80002,86272



TEST REPORT

80008



80013, 80047, 80048



TEST REPORT

80026



86273



TEST REPORT

86274,80019



86275



***** END *****