

FCC TEST REPORT

FCC ID : OGXANDROIDBOX
Applicant : Guangzhou Shiyuan Electronics Co., Ltd.
Address : No.192,Kezhu Road,Science Park,Guangzhou,Guangdong,China
Manufacturer : the same as above
Address : the same as above

Equipment Under Test (EUT) :

Product Name : Android BOX
Model No. : A31&A31A
Rules : FCC CFR47 Part15 B Section 15.109:2010

Date of Test : January 12~28,2013

Date of Issue : January 28,2013

Test Result : PASS*

Remark:

* The sample detailed above has been tested to the requirements of FCC rules mentioned above.

The test results have been reviewed against the directives above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

PERPARED BY:

Waltek Services (Shenzhen) Co., Ltd.

1/F, Fukangtai Building, West of Baima Road., Songgang Street, Bao'an District,
Shenzhen, China

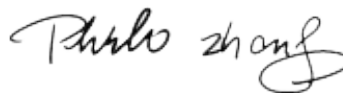
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Compiled by:



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Approved by:



Philo Zhong / Manager

Report No.: WTS13S0100416E

2 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.107	PASS
Radiated Emissions	15.109	PASS

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4 General Information

4.1 General Description of E.U.T.

Product Name	: Android BOX
Model No.	: A31&A31A
Model Description	: The circuit principle,PCB wiring and internal structure are the same except back panel.A31 with SD card socket,A31A with micro SD card and AV output socket.
Oscillator	: Crystal 32.768KHz for CPU,40MHz for RF module

4.2 Details of E.U.T.

Technical Data	: DC12V, 1.5A powered from adapter
Adapter	: FLYPOWER Model:PS18K1201500UE INPUT:100-240V~50/60Hz 500mA

4.3 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

Waltek Services (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

4.4 Test Location

All the tests were performed at:
Waltek Services (Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101178	Aug. 13,2012	Aug. 13,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 13,2013
3.	Cable	HUBER+SUHNER	CBL2-NN-3M	2230300	Aug.14,2012	Aug. 14,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Feb .23,2012	Feb .23,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	SCHWARZBECK	AK 9513	-	Aug. 13,2012	Aug. 13,2013
Associated Equipment						
1	Computer	Acer	Aspire AG1720	1300148096	-	-
2	Mouse	shuangfeiyan	OP-220		-	-
3	Keyboard	shuangfeiyan	KB-8620D		-	-
4	LCD	MAG	EV527	WI1W061001477	-	-

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emissions

Test Requirement:	FCC CFR 47 Part 15 Section 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Test Condition

Operating Environment:

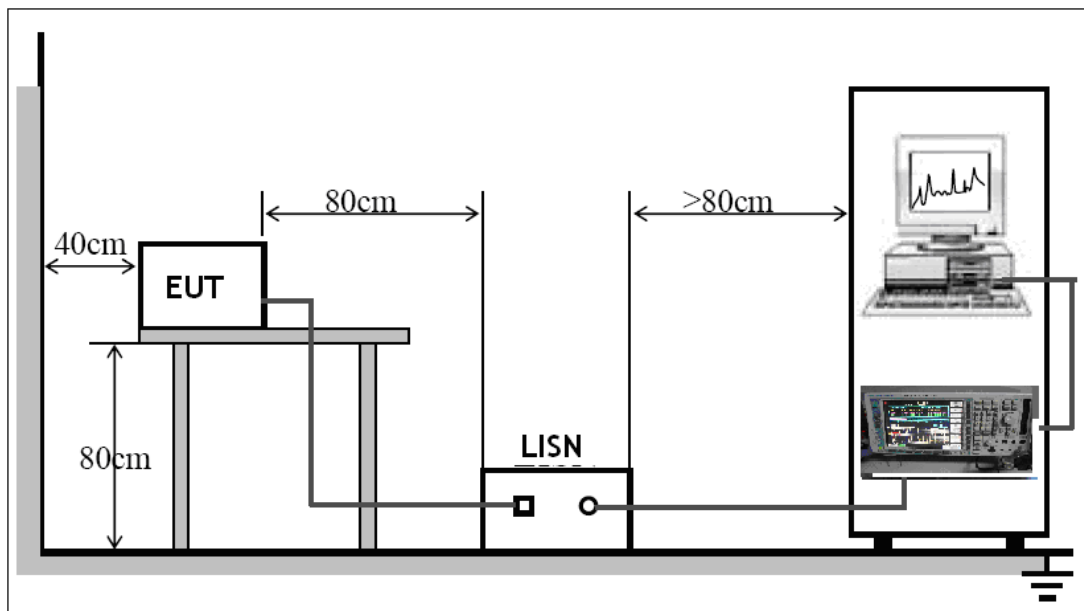
Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	1012 mbar

Operation Mode and Spectrum Setup:

The EUT was tested in Ethernet linking mode. The worst data were shown as follow.

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, the specification used in this report was the FCC Part15.207 limits.



The EUT was placed on the test table in shielding room

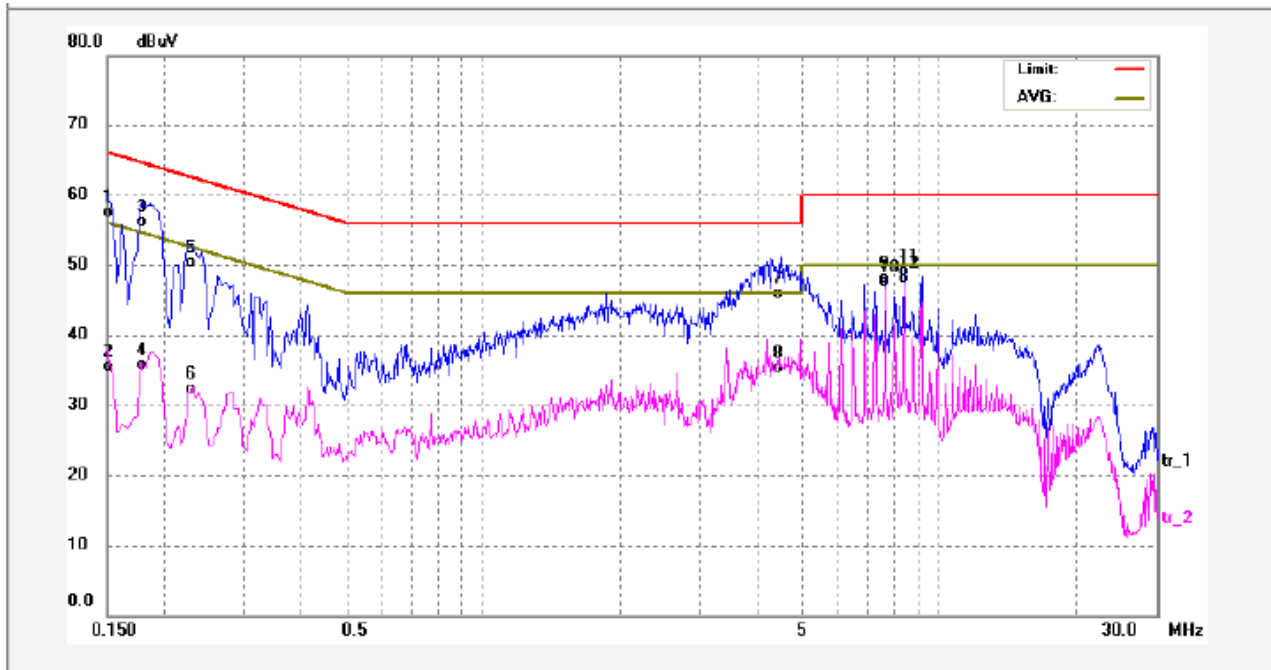
6.3 Conducted Emission Test Result

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

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Test Mode: Ethernet linking

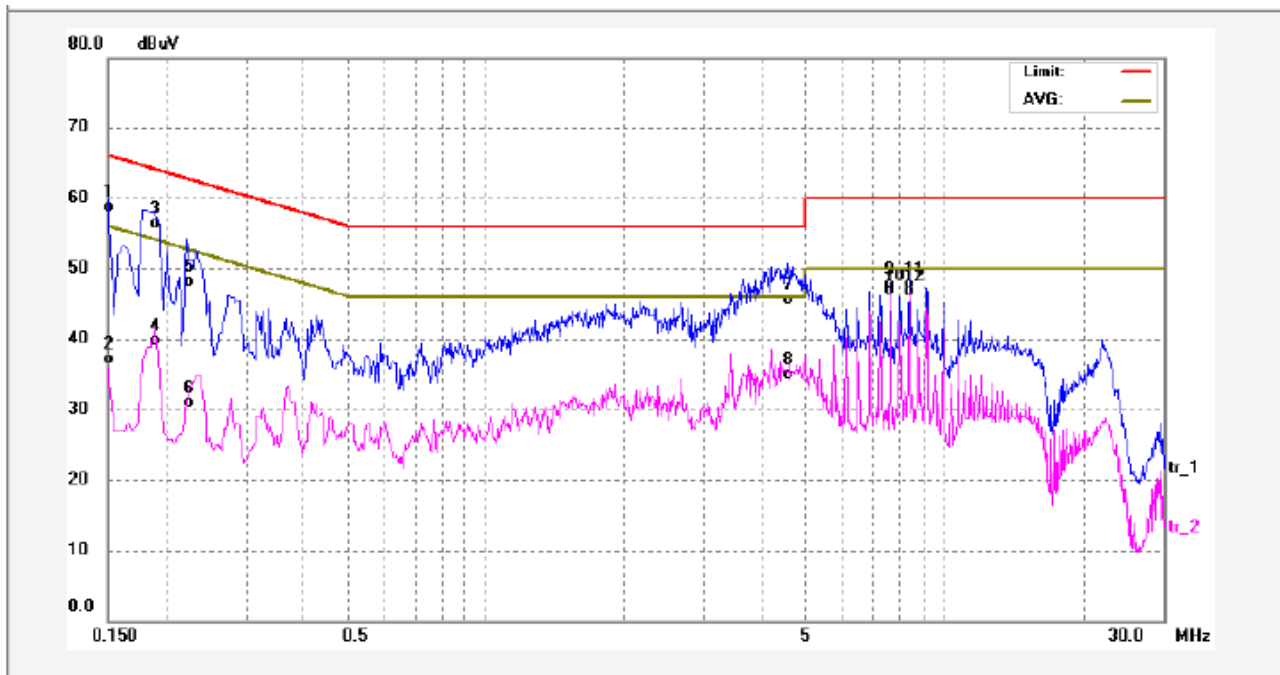
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	45.50	11.17	56.67	65.99	-9.32	QP	
2	0.1500	23.63	11.17	34.80	55.99	-21.19	AVG	
3	0.1787	43.97	11.24	55.21	64.54	-9.33	QP	
4	0.1787	23.76	11.24	35.00	54.54	-19.54	AVG	
5	0.2260	38.17	11.30	49.47	62.59	-13.12	QP	
6	0.2260	20.22	11.30	31.52	52.59	-21.07	AVG	
7	4.5180	33.92	11.23	45.15	56.00	-10.85	QP	
8	4.5180	23.18	11.23	34.41	46.00	-11.59	AVG	
9	7.6300	36.08	11.27	47.35	60.00	-12.65	QP	
10	7.6300	35.35	11.27	46.62	50.00	-3.38	AVG	
11	8.3940	36.96	11.28	48.24	60.00	-11.76	QP	
12	8.3940	36.06	11.28	47.34	50.00	-2.66	AVG	

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Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	46.64	11.17	57.81	65.99	-8.18	QP	
2	0.1500	25.23	11.17	36.40	55.99	-19.59	AVG	
3	0.1900	44.26	11.27	55.53	64.03	-8.50	QP	
4	0.1900	27.58	11.27	38.85	54.03	-15.18	AVG	
5	0.2220	36.05	11.30	47.35	62.74	-15.39	QP	
6	0.2220	18.73	11.30	30.03	52.74	-22.71	AVG	
7	4.5340	33.38	11.23	44.61	56.00	-11.39	QP	
8	4.5340	22.80	11.23	34.03	46.00	-11.97	AVG	
9	7.6300	35.58	11.27	46.85	60.00	-13.15	QP	
10	7.6300	34.88	11.27	46.15	50.00	-3.85	AVG	
11	8.3940	35.54	11.28	46.82	60.00	-13.18	QP	
12	8.3940	34.53	11.28	45.81	50.00	-4.19	AVG	

7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.109

Test Method: ANSI C63.4:2003

Test Result: PASS

Frequency Range: 32.768 KHz to 13 GHz

Except as otherwise indicated in paragraphs (b)(2) or (b)(3), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to 5th harmonic of the highest frequency .

Measurement Distance: 3m

15.109 Limit:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 -0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

7.1 EUT Operation:

Operating Environment:

Temperature: 25.5 °C
 Humidity: 51 % RH
 Atmospheric Pressure: 1012 mbar

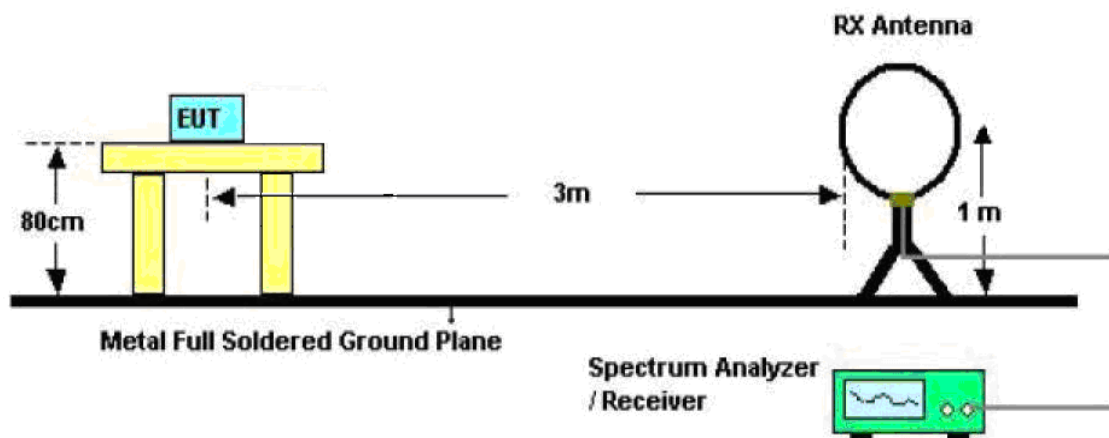
Operation Mode:

The EUT was tested in Ethernet linking mode. The worst data were shown as follow.

7.2 Test Setup

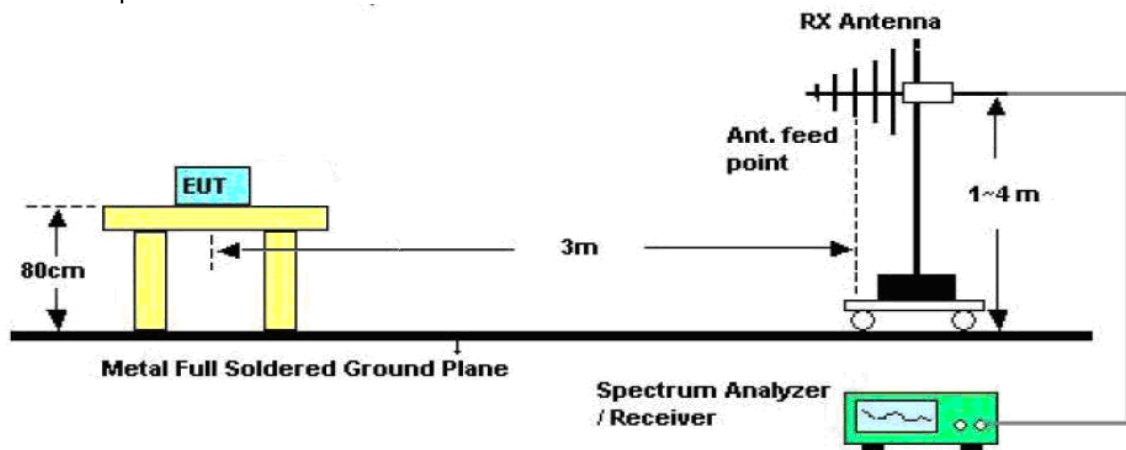
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.

The test setup for emission measurement below 30MHz.

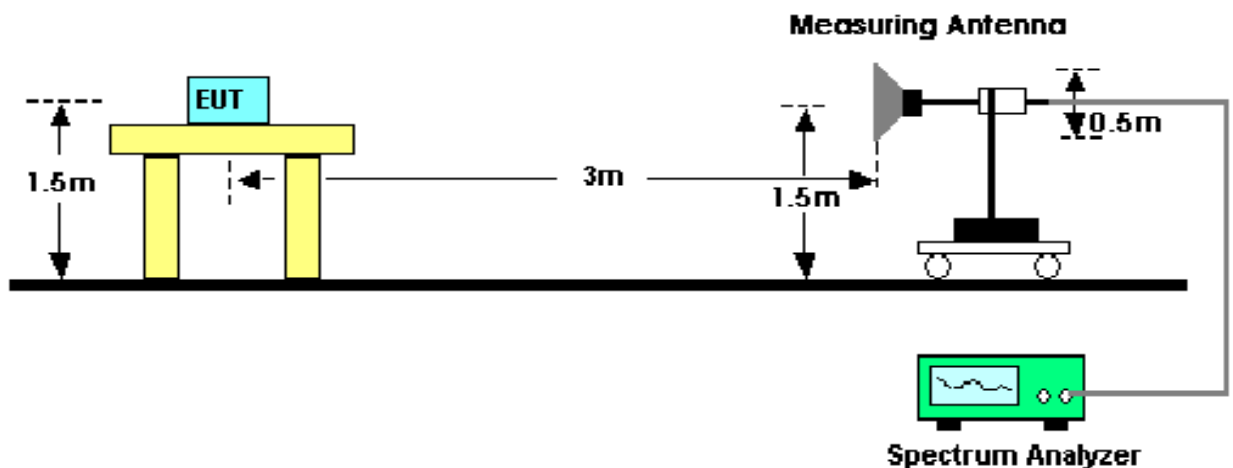


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The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested from 32.768KHz to 13 GHz.

Below 30MHz

Sweep SpeedAuto
 IF Bandwidth10KHz
 Video Bandwidth10KHz
 Resolution Bandwidth10KHz

30 MHz to 1 GHz.

Sweep SpeedAuto
 IF Bandwidth120 KHz
 Video Bandwidth100KHz
 Quasi-Peak Adapter Bandwidth120 KHz
 Quasi-Peak Adapter ModeNormal
 Resolution Bandwidth.....100KHz

Above 1GHz

Waltek Services (Shenzhen) Co.,Ltd.
<http://www.waltek.com.cn>

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Sweep SpeedAuto
 IF Bandwidth120 KHz
 Video Bandwidth3MHz
 Quasi-Peak Adapter Bandwidth120 KHz
 Quasi-Peak Adapter ModeNormal
 Resolution Bandwidth.....1MHz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under X-axis. The worst data were shown as follow.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:
 Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain the **"Margin"** column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

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7.6 Summary of Test Results

Test mode: Ethernet linking

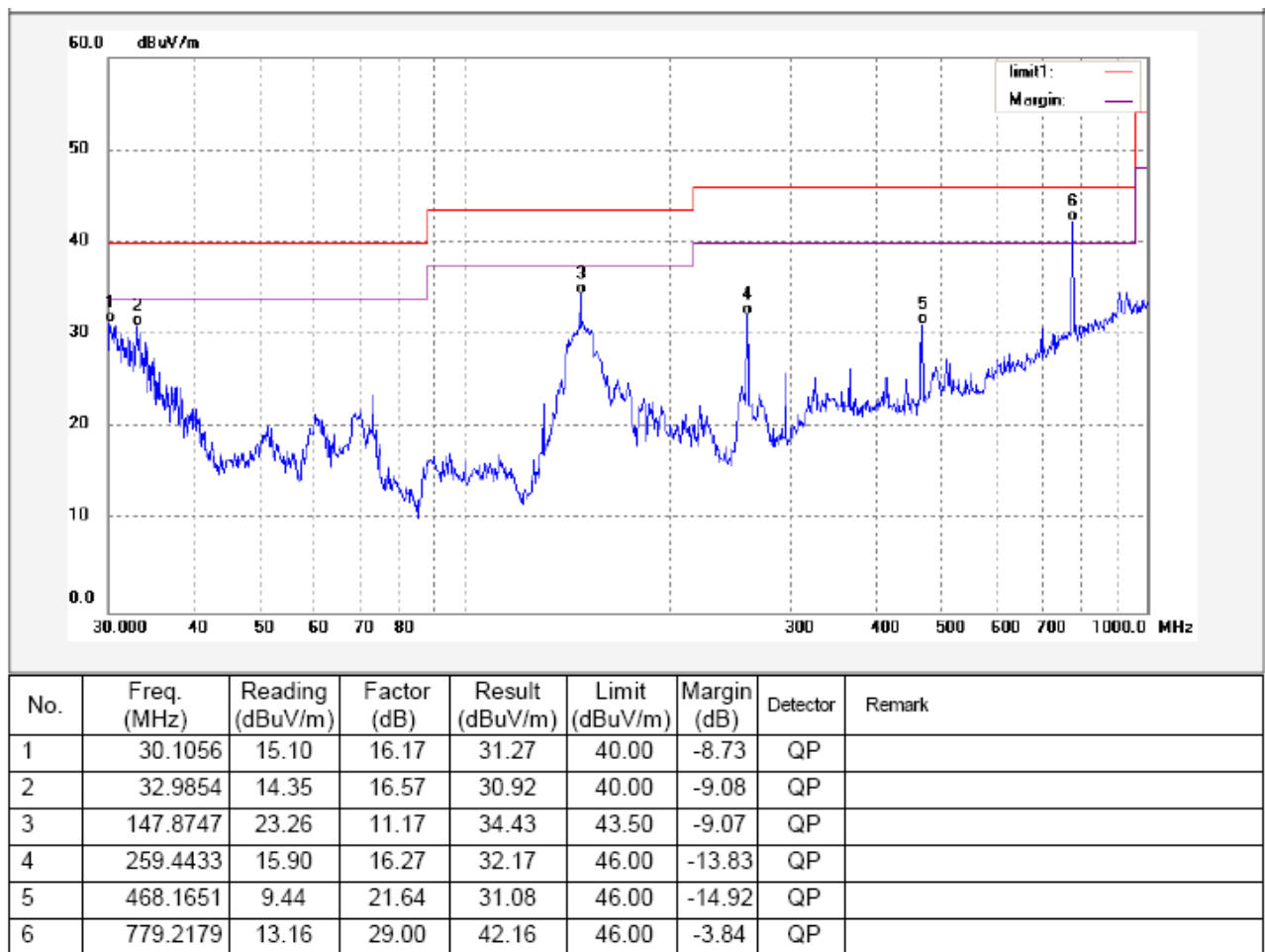
Test Frequency : Below 30MHz

Remark: After pretested, the emission below 30MHz is no more than background level, the data do not show in the report.

Test mode: Ethernet linking

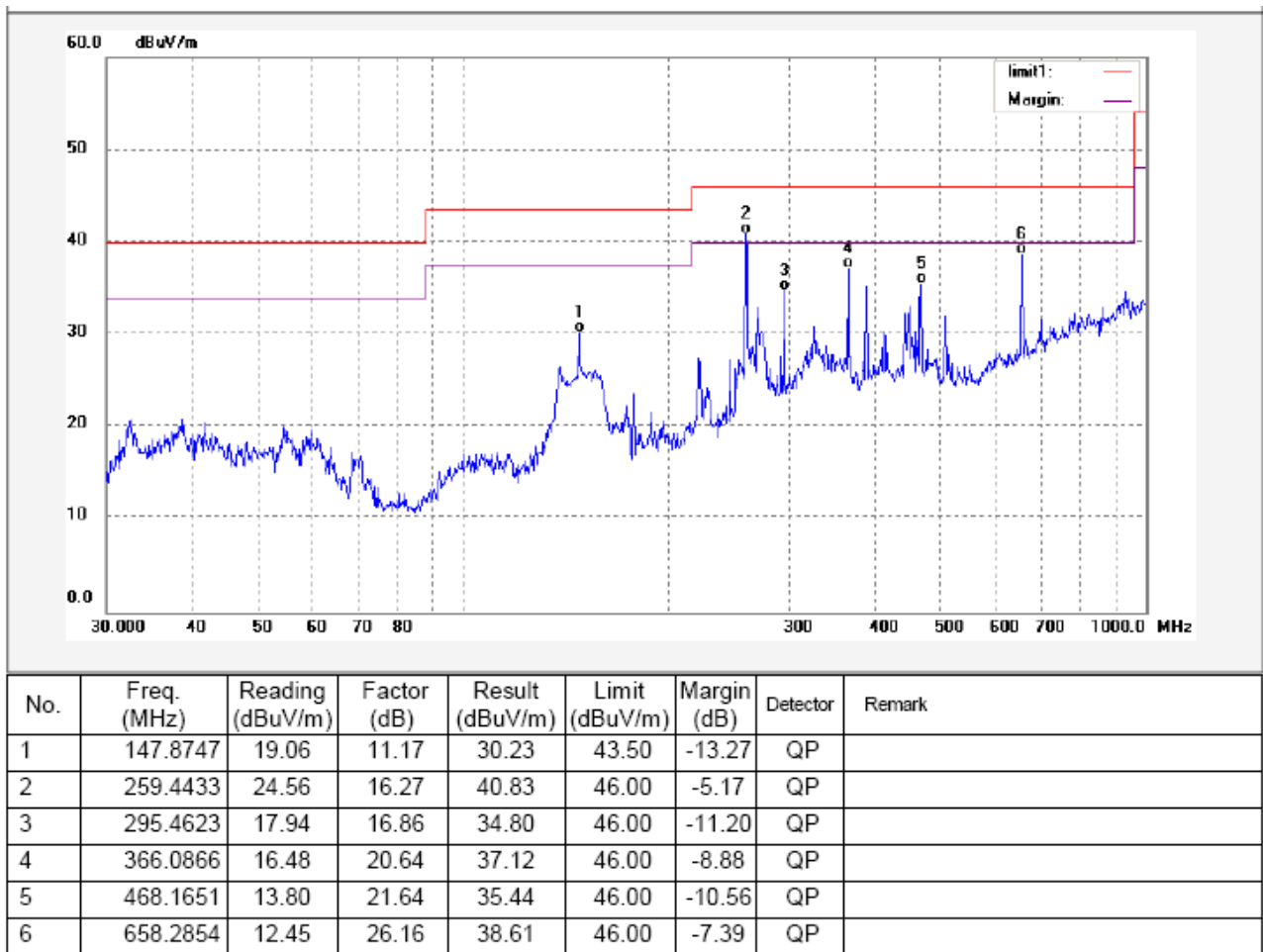
Test Frequency : 30MHz ~ 1000MHz

Antenna polarization: Vertical



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Antenna polarization: Horizontal

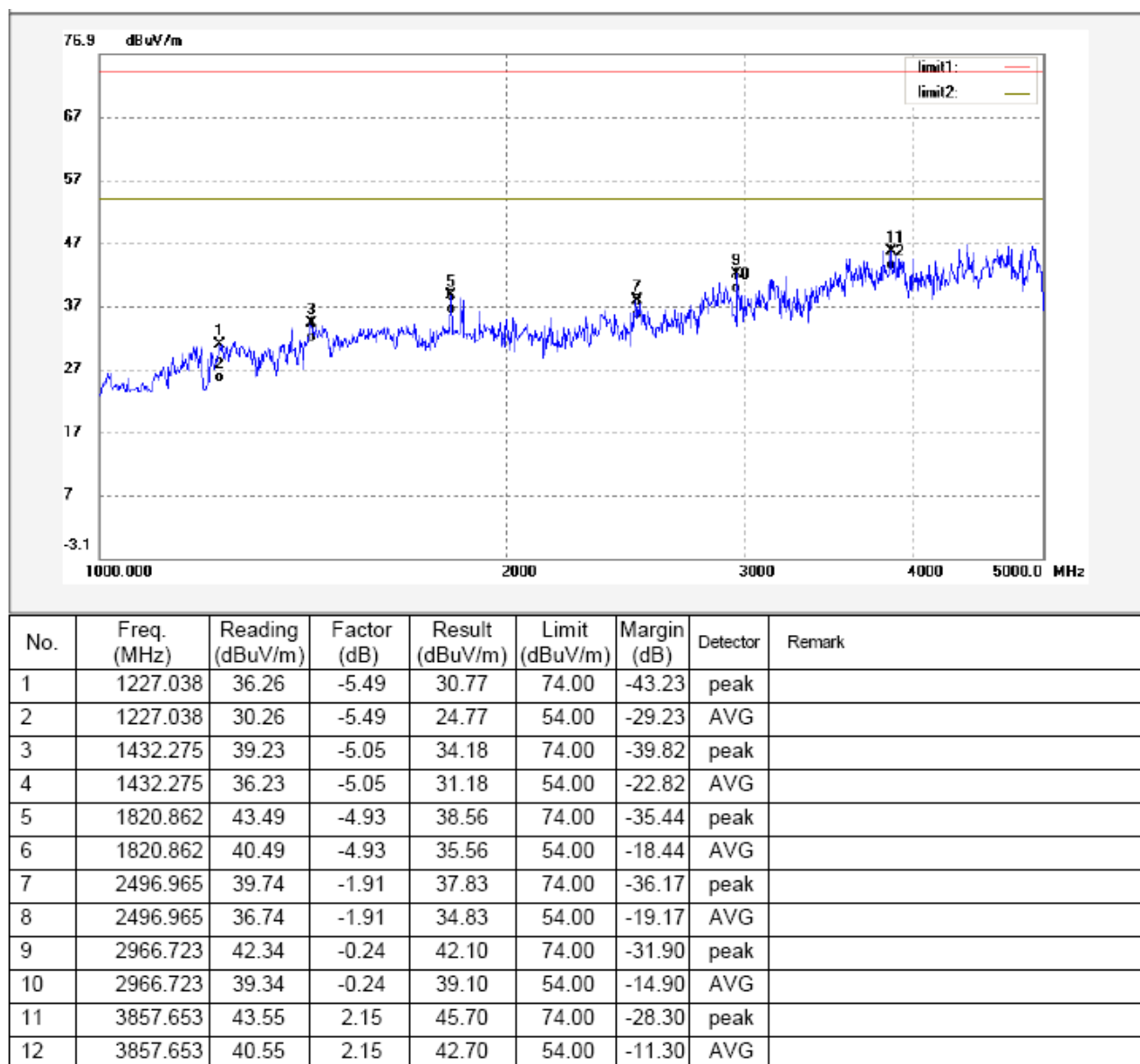


Report No.: WTS13S0100416E

Test mode: Ethernet linking

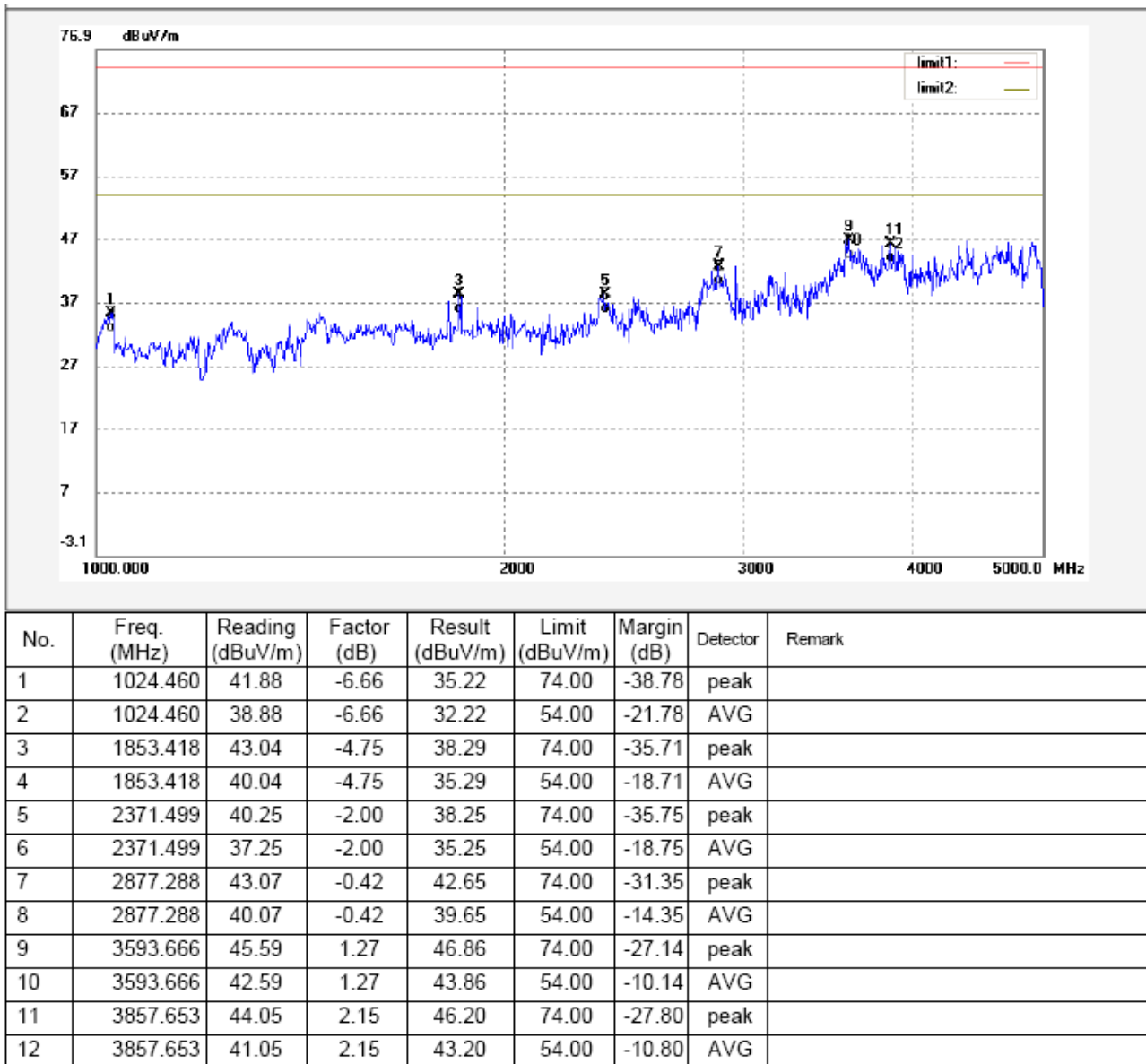
Test Frequency : from 1GHz to 5GHz

Antenna polarization: Vertical



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Antenna polarization: Horizontal

**Test mode: Ethernet linking**

Test Frequency : above 5GHz

Remark: After pretested, the emissions above 5GHz is no more than background level, the data do not show in the report.

8 Photographs –Test Setup

8.1 Conducted Emissions

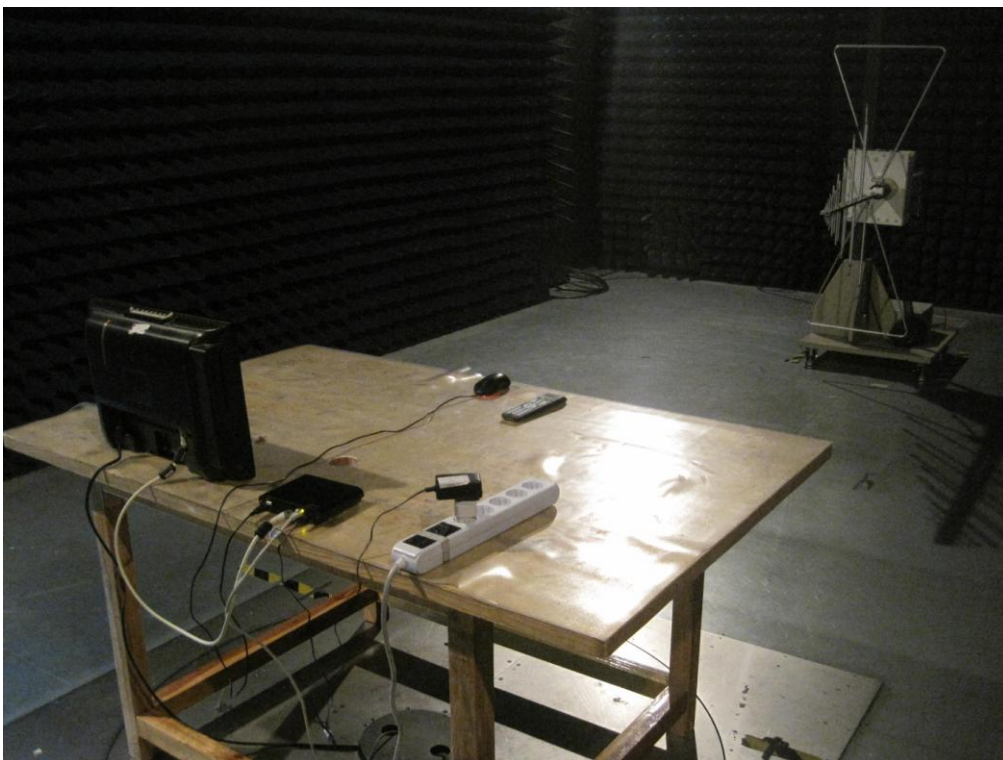


8.2 Radiated Emissions

Below 30MHz

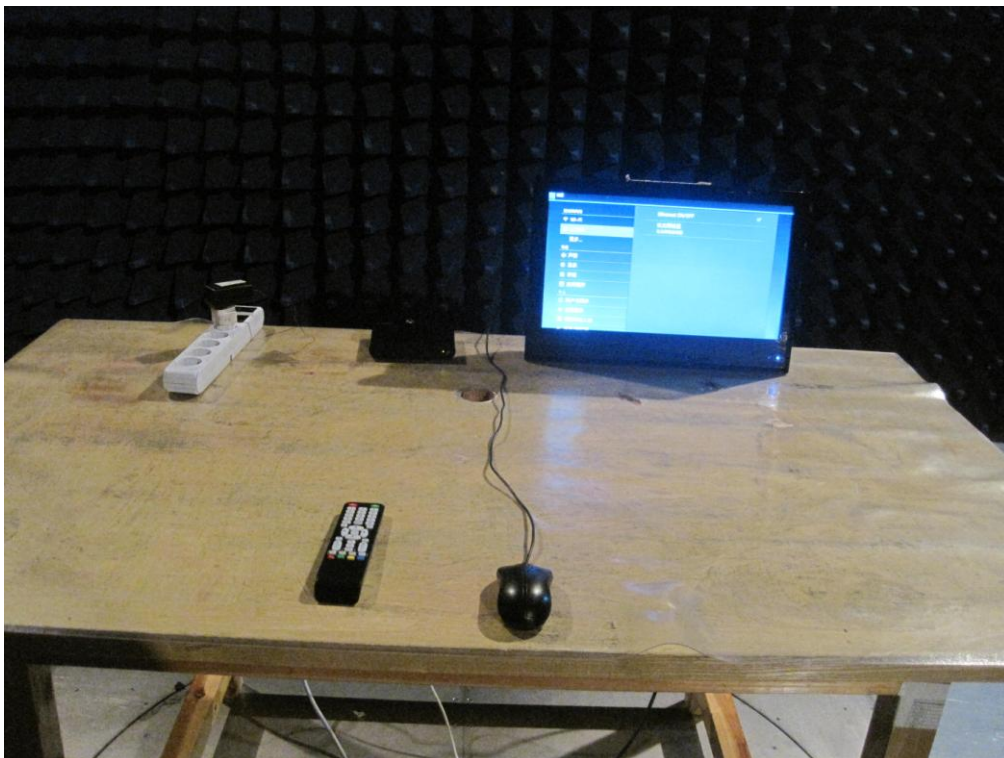


From 30-1000MHz



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Above 1000MHz



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9 Photographs - Constructional Details

9.1 EUT – External View

Refer to test report No.: WT12085649-U-S-F

9.2 EUT- Internal View

Refer to test report No.: WT12085649-U-S-F

==End of test report==