

**SGS-CSTC Standards  
Technical Services Co., Ltd.**

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
Fax: +86 (0) 21 6191 5655  
Tino.Pan@sgs.com

Report No.: SHEMO09080096901  
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## **TEST REPORT**

**Application No. :** SHEMO09080096901  
**Applicant:** Hanwang Technology Co., Ltd  
**FCC ID:** XQIWLTABLET  
**Fundamental Frequency :** 2410M to 2480MHz  
**Equipment Under Test (EUT):**  
Name: Wireless Tablet  
Model No.: WL0604, WL0906, WL0604M, WL0906M  
**Standards:** FCC PART 15 SUBPART C, Section 15.249  
**Date of Receipt:** Aug 22, 2009  
**Date of Test:** Sep 10, 2009 to Sep 11, 2009  
**Date of Issue:** Sep 11, 2009  
**Test Result :** **PASS \***

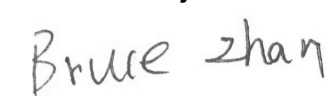
\* In the configuration tested, the EUT complied with the standards specified above.

**Approved by:**



Tino Pan  
E&E Section Manager

**Tested By:**



Bruce Zhan  
EMC TEST Engineer

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## 2 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Flid Strength of Fundamental	FCC PART 15 :2008	Section 15.249 (a)	PASS
Flid Strength of Unwanted Emissions	FCC PART 15 :2008	Section 15.209& Section 15.249 (d)	PASS
Occupied Bandwidth	FCC PART 15 :2008	Section 15.249	PASS
Band Edges	FCC PART 15 :2008	Section 15.249 (d)	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15 :2008	Section 15.207	PASS

Remark:

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

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## 4 General Information

### 4.1 Client Information

Applicant: Hanwang Technology Co., Ltd  
Address of Applicant: Hanwang Tower, Building No.5, Zhongguancun Software Park, Haidian District, Beijing, P.R. China 100193

### 4.2 General Description of E.U.T.

Name: Wireless Tablet  
Model No.: WL0604, WL0906, WL0604M, WL0906M  
Number of Channels 15 channel  
Channel Separation 5MHz  
Antenna Type Integral  
Power Supply: Battery inside 3,7V

### 4.3 Description of Support Units

The EUT has been tested independently.

### 4.4 Standards Applicable for Testing

The customer requested FCC tests for the EUT.  
The standard used was FCC PART 15, SUBPART C Section 15.249

### 4.5 Test Location

All tests were performed at:  
SGS-CSTC Standards Technical Services Co., Ltd., Shanghai EMC Laboratory  
588 West Jindu Road, Songjiang District, Shanghai, China  
Tel: +86 21 61915666 Fax: +86 21 61915678

### 4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 402683

SGS-CSTC Standards Technical Services 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 402683. SGS-CSTC is an authorized test laboratory for the DoC process.

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## 5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100324	2009-4-21	2010-4-20
2	EMI test receiver	Rohde & Schwarz	ESU40	100109	2009-6-4	2010-6-3
3	Bilog Antenna	TESEQ	CBL6112D	23193	2009-5-14	2010-5-14
4	Horn Antenna	EMCO	3115	100285	2008-10-9	2009-10-8
5	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2009-5-29	2010-5-28
6	VHAP PRECISION HALFWAVE DIPOLES	R&S	VHAP	1096+1097	2009-5-18	2010-5-17
7	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY—2003P	--	2008-10-21	2009-10-20
8	CLAMP METER	FLUKE	316	86080010	2009-4-21	2010-4-20
9	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2008-10-21	2009-10-20
10	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2008-10-21	2009-10-20
11	TEMPERATURE& HUMIDITY BOX	KSON	THS-D2C-100	K40723	2008-11-18	2009-11-17
12	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2009-6-4	2010-6-3
13	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2009-5-8	2010-5-7

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## 6 Test Results

### 6.1 E.U.T. Operation

Input voltage: Battery inside  
Type of antenna: Integral  
Temperature: 20.0 -25.0 °C  
Humidity: 38-48 % RH  
Atmospheric Pressure: 992 -1006 mbar

EUT Operation: Test in low, middle and high channel.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2410	9	2450
2	2415	10	2455
3	2420	11	2460
4	2425	12	2465
5	2430	13	2470
6	2435	14	2475
7	2440	15	2480
8	2445		

### 6.2 Test Procedure & Measurement Data

#### 6.2.1 Test in transmitting mode

**Test Requirement:** FCC Part15 C Section 15.249(a) & (d)  
**Test Method:** Based on FCC Part15 C Section 15.249 & ANSI C63.4  
**Test Date:** Sep 10, 2009  
**Measurement Distance:** 3m (Compact Semi-Anechoic Chamber)  
**Frequency range** 30 MHz – 25GHz for transmitting mode.  
Test instrumentation resolution bandwidth  
120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 M – 25GHz)  
**Operation:** Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal, a turntable rotate through 360° in the horizontal plane and it is used to support the test sample at 0.8m above the ground plane.

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## Requirements:

### FCC Part 15.249(a)

Fundamental Frequency (MHz)	Field Strength of Fundamental (dB $\mu$ V/m @ 3m)	Field Strength of Harmonics (dB $\mu$ V/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

### FCC Part 15.249(d)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

## Remark:

The fundamental frequency of the EUT is 2410MHz , 2445MHz and 2480MHz.

The limit for average field strength dB $\mu$ V/m for the fundamental frequency = 94.0 dB $\mu$ V/m.

The limit for peak field strength dB $\mu$ V/m for the fundamental frequency = 114.0 dB $\mu$ V/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dB $\mu$ V/m for the harmonics = 54.0 dB $\mu$ V/m.

The limit for peak field strength dB $\mu$ V/m for the harmonics = 74.0 dB $\mu$ V/m.

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or 54.0 dB $\mu$ V/m in 15.209. Here the limit for the other emission is 54.0 dB $\mu$ V/m.

**Test Procedure:** The procedure used was ANSI Standard C63.4-2003. The receiver was scanned from 30MHz to 25GHz. When an emission was found, the table was turned to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

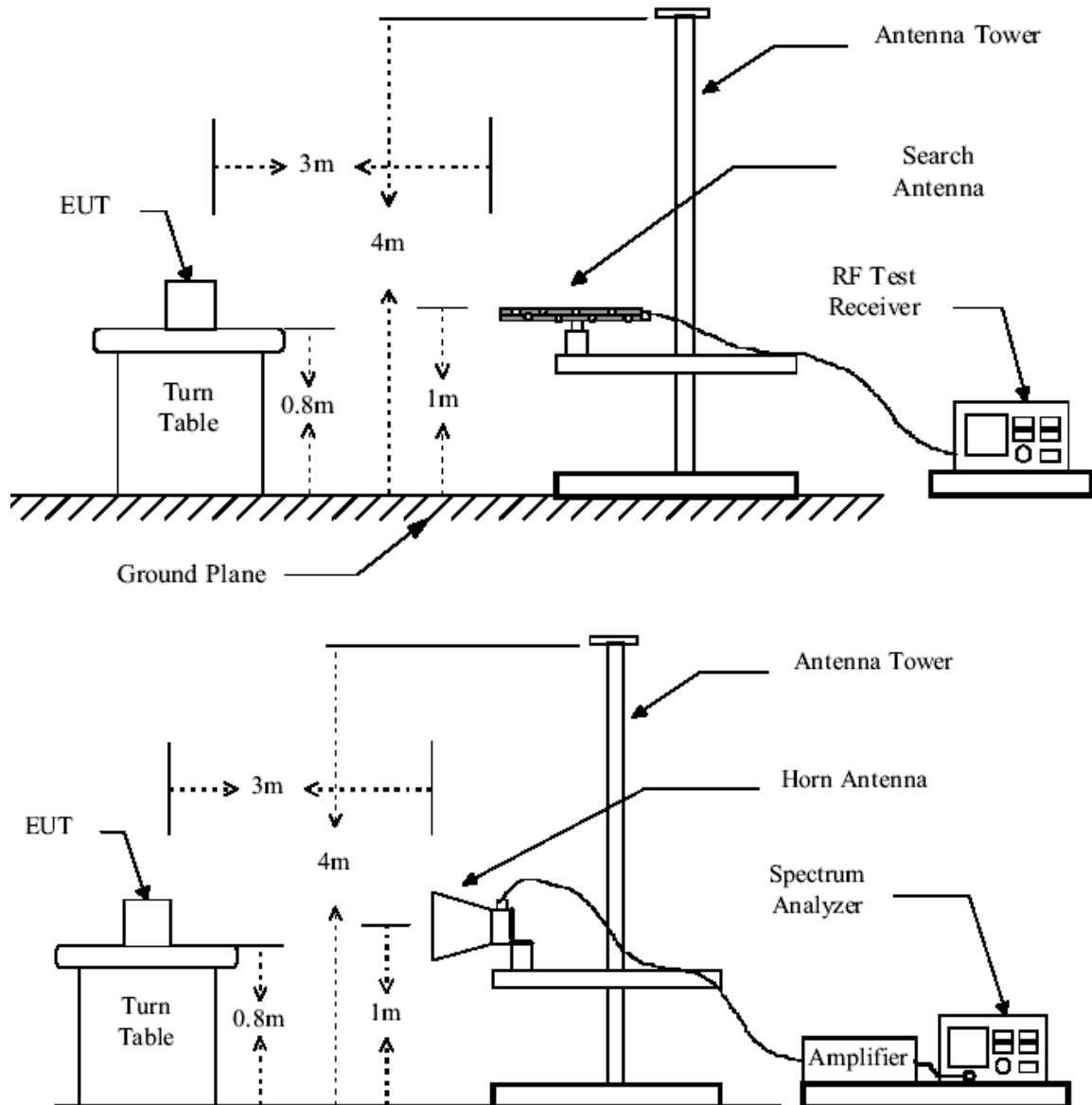
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## Test Configuration:



The field strength is calculated by adding the Antenna Factor, Cable Factor & preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{preamplifier Factor}$$

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**Transmitter:**

**Test in Channel Low in transmitting status-** Vertical polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
30.0	14.2	0.18	--	15.5	29.88	40.0
200.0	10.9	0.25	--	17.2	28.35	43.5
830.0	22.8	0.42	--	14.7	37.92	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

**Peak Measurement**

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4820.00	30.85	1.2	43.4	64.47	53.12	74.0
7230.00	36.05	1.7	43.1	57.28	51.93	74.0
9640.00	37.8	2.22	43.9	50.73	46.85	74.0

**Average Measurement**

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4820.00	30.85	1.2	43.4	56.24	44.89	54.0
7230.00	36.05	1.7	43.1	48.73	43.38	54.0
9640.00	37.8	2.22	43.9	42.73	38.85	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2410.00	27.6	0.92	42.2	90.86	79.11	77.18	65.43

Remark: No other radiation has been found.

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## Test in Channel Low in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement:

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
30.00	14.2	0.18	--	16.3	30.68	40.0
200.00	10.9	0.25	--	17.8	28.95	43.5
830.00	22.8	0.42	--	15.1	38.32	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

### Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4820.00	30.85	1.2	43.4	63.77	52.42	74.0
7230.00	36.05	1.7	43.1	58.3	52.95	74.0
9640.00	37.8	2.22	43.9	49.68	45.80	74.0

### Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4820,00	30.85	1.2	43.4	54.23	42.88	54.0
7230	36.05	1.7	43.1	46.25	40.90	54.0
9640	37.8	2.22	43.9	45.86	41.98	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2410	27.6	0.92	42.2	87.96	77.91	74.28	64.23

Remark: No other radiation has been found.

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## Test in Channel Middle in transmitting status- Vertical polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
30.05	14.2	0.18	--	16.7	31.08	40.0
200.00	10.9	0.25	--	17.2	28.35	43.5
830.00	22.8	0.42	--	14.9	38.12	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

### Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4890.00	30.9	1.30	43.3	62.31	51.21	74.0
7335.00	36.18	1.75	43.1	55.82	50.65	74.0
9780.00	38.11	2.22	43.9	45.76	42.19	74.0

### Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4890.00	30.9	1.30	43.3	51.46	40.36	54.0
7335.00	36.18	1.75	43.1	46.23	41.06	54.0
9780.00	38.11	2.22	43.9	37.23	33.66	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2445.00	27.90	1.20	42.4	84.77	75.43	71.47	62.13

Remark: No other radiation has been found.

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## Test in Channel Middle in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)
30.00	14.2	0.18	--	15.9	30.28	40.0
200.00	10.9	0.25	--	16.8	27.95	43.5
830.00	22.8	0.42	--	15.1	38.32	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

### Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)
4890.00	30.9	1.3	43.3	60.92	49.82	74
7335.00	36.18	1.75	43.1	54.73	49.56	74
9780.00	38.11	2.22	43.9	46.25	42.68	74

### Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading Level (dB $\mu$ V/m)	Emission Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)
4890.00	30.9	1.30	43.3	50.42	39.32	54.0
7335.00	36.18	1.75	43.1	46.26	41.09	54.0
9780.00	38.11	2.22	43.9	37.24	33.67	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dB $\mu$ V)	Average Reading Level (dB $\mu$ V)	Peak Emission Level (dB $\mu$ V/m)	Average Emission Level (dB $\mu$ V/m)
2445.00	27.9	1.2	42.4	79.14	70.43	65.84	57.13

Remark: No other radiation has been found.

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## Test in Channel High in transmitting status- Vertical polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
30.00	14.2	0.18	--	16.3	30.68	40.0
200.00	10.9	0.25	--	16.7	27.85	43.5
830.00	22.8	0.42	--	14.9	38.12	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

### Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4960.00	31.10	1.38	43.4	61.72	50.80	74.0
7440.00	36.40	1.95	43.2	55.73	50.88	74.0
9920.00	38.33	2.65	44.1	48.36	45.24	74.0

### Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4960.00	31.10	1.38	43.4	52.63	41.71	54.0
7440.00	36.40	1.95	43.2	47.26	42.41	54.0
9920.00	38.33	2.65	44.1	41.27	38.15	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2480.00	28.1	1.25	42.3	82.36	73.63	69.41	60.68

Remark: No other radiation has been found.

# SGS-CSTC Standards Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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## Test in Channel High in transmitting status- Horizontal polarization

30MHz~1GHz Spurious Emissions ,Quasi-Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
30.00	14.2	0.18	--	15.9	30.28	40.0
200.00	10.9	0.25	--	16.5	27.65	43.5
830.00	22.8	0.42	--	15.3	38.52	46.0

1~25 GHz Harmonics & Spurious Emissions, Peak & Average Measurement

### Peak Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4960.00	31.1	1.38	43.4	63.47	52.55	74.0
7440.00	36.4	1.95	43.2	58.76	53.91	74.0
9920.00	38.33	2.65	44.1	51.93	48.81	74.0

### Average Measurement

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Emission Reading (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)
4960.00	31.10	1.38	43.4	55.86	44.94	54.0
7440.00	36.40	1.95	43.2	51.82	46.97	54.0
9920.00	38.33	2.65	44.1	44.26	41.14	54.0

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
2480.00	28.1	1.25	42.3	84.86	75.34	71.91	62.39

Remark: No other radiation has been found.

# SGS-CSTC Standards Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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**Receiver:** 30MHz~25 GHz Harmonics & Spurious Emissions

Vertical polarization:

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
400	17.1	0.32	--	17.4	13.8	34.82	31.22
1600	24.9	0.75	42.2	55.7	43.5	39.15	26.95
4915	31.6	1.40	43.5	57.8	46.8	47.30	36.30

Horizontal polarization:

Frequency (MHz)	Antenna factors(dB/m)	Cable loss(dB)	Preamp factor(dB)	Peak Reading Level (dBμV)	Average Reading Level (dBμV)	Peak Emission Level (dBμV/m)	Average Emission Level (dBμV/m)
400	17.1	0.32	--	16.8	14.2	34.22	31.62
1600	24.9	0.75	42.2	57.36	45.8	40.81	29.25
4915	31.6	1.40	43.5	59.43	47.2	48.93	36.70

None of radiation has been found in receiving mode.

**TEST RESULTS: The unit does meet the FCC requirements.**

# SGS-CSTC Standards Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

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Fax: +86 (0) 21 6191 5655  
Tino.Pan@sgs.com

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## 6.2.2 Occupied Bandwidth & Band Edge

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.4  
Operation within the band 2400-2483.5MHz  
Test Date: Sep 11, 2009  
Requirements: 15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  
Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. Set RBW=100kHz, VBW=300kHz, sweep time = Auto.

Occupied Bandwidth:

Test result:

Test Channel	20 dB bandwidth
Low	2.548MHz
Middle	2.564MHz
High	2.548MHz

Band edge:

The Lower Edge 2.4000GHz: the value is attenuated 38,63dB.

The Upper Edge 2.4835GHz: the value is attenuated 40,69dB.



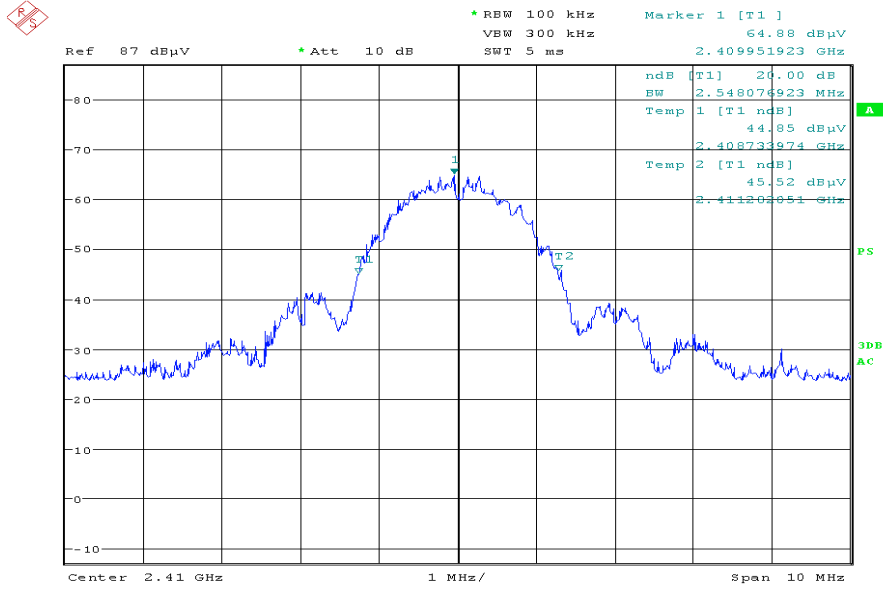
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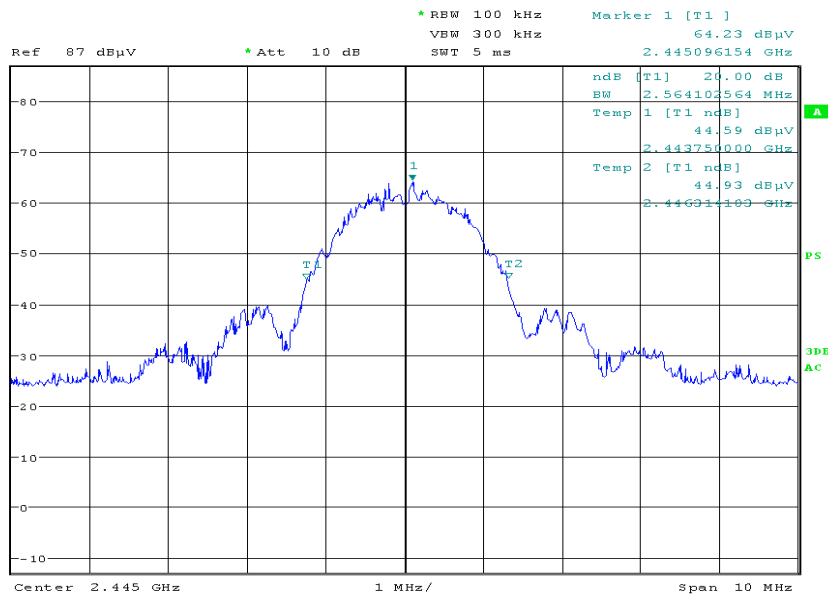
Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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## Refer plots: Low Channel:



## Middle Channel:



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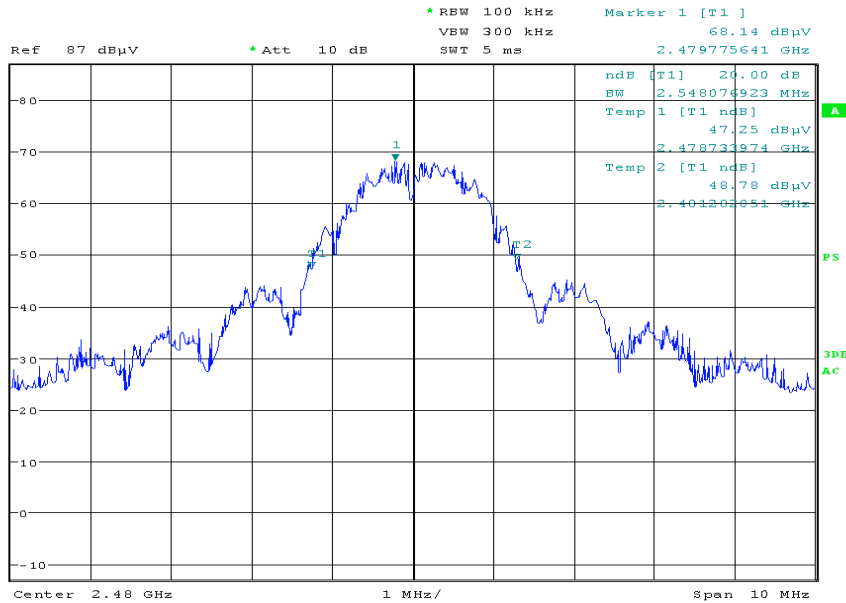
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588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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## High Channel:



# SGS-CSTC Standards Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
Fax: +86 (0) 21 6191 5655  
Tino.Pan@sgs.com

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## 6.3 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement: FCC Part15 C 15.207  
Test Method: ANSI C63.4  
Test Date: Sep 11, 2009  
Frequency Range: 150KHz to 30MHz  
Detector: Peak for pre-scan (9kHz Resolution Bandwidth)  
Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit  
EUT Operation: Test the EUT in working mode.

### Test result:

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

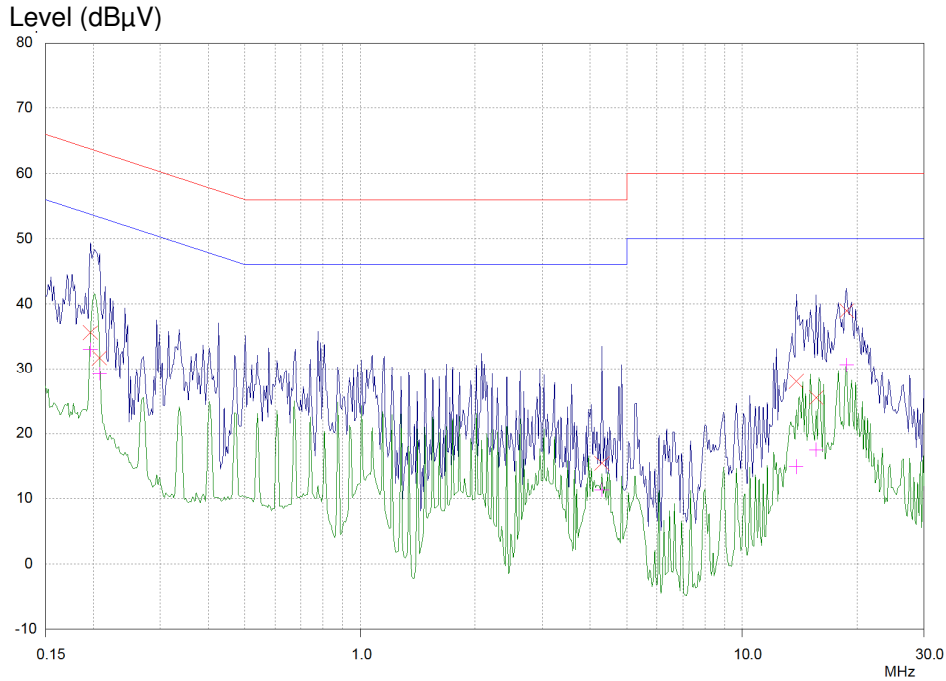
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588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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Live Line:



Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB
0.19667	35.61	63.75	28.14
0.20795	31.69	63.29	31.60
4.29511	15.39	56.00	40.61
13.85713	27.99	60.00	32.01
15.61641	25.41	60.00	34.59
18.75744	38.92	60.00	21.08

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
0.19667	33.01	53.75	20.74
0.20795	29.20	53.29	24.09
4.29511	11.29	46.00	34.71
13.85713	14.88	50.00	35.12
15.61641	17.47	50.00	32.53
18.75744	30.61	50.00	19.39

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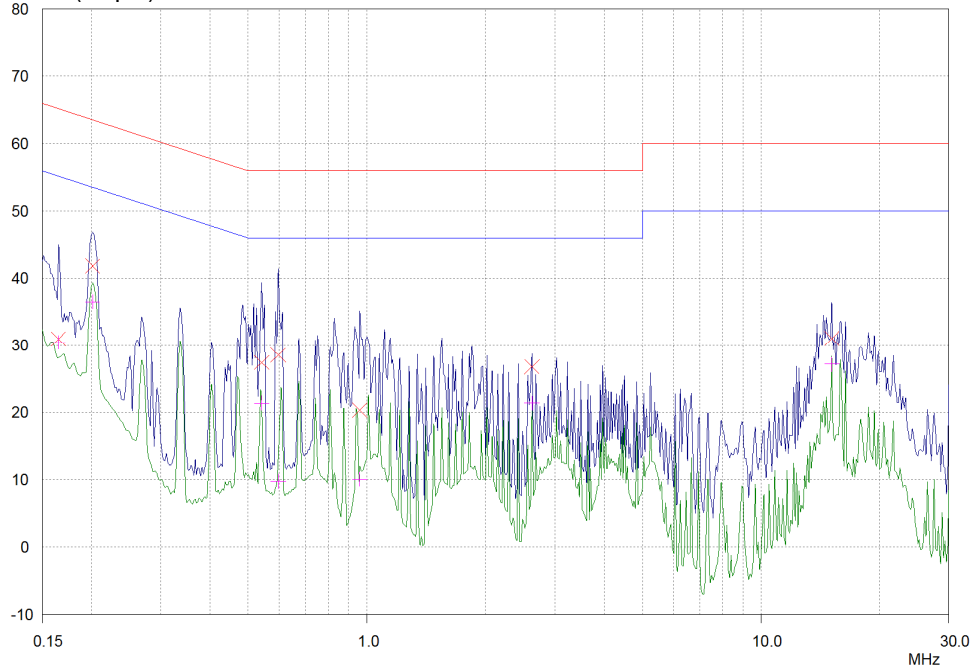
588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666  
 Fax: +86 (0) 21 6191 5655  
 Tino.Pan@sgs.com

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Neutral Line:

Level (dB $\mu$ V)



Frequency MHz	QP Level dB $\mu$ V	QP Limit dB $\mu$ V	QP Delta dB
0.16505	30.98	65.21	34.23
0.20143	41.86	63.55	21.69
0.54104	27.40	56.00	28.60
0.59533	28.53	56.00	27.47
0.96027	20.33	56.00	35.67
2.62073	26.76	56.00	29.24
15.12653	31.05	60.00	28.95

Frequency MHz	AV Level dB $\mu$ V	AV Limit dB $\mu$ V	AV Delta dB
0.16505	30.44	55.21	24.77
0.20143	36.51	53.55	17.04
0.54104	21.34	46.00	24.66
0.59533	9.73	46.00	36.27
0.96027	10.05	46.00	35.95
2.62073	21.36	46.00	24.64
15.12653	27.15	50.00	22.85

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