



MPE TEST REPORT

FCC Part 2.1091(b)

Report Reference No.: WE10100020

FCC ID.: QISHG655B

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Date of issue: Dec 14, 2010

Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name: Huawei Technology Co., Ltd

Address: Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129 P.R.C

Test specification:

Standard: FCC Part 2.1091(b)

TRF Originator: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF: Dated 2006-06

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Test item description: Home Gateway

Trade Mark:



Manufacturer: Huawei Technologies Co., Ltd.

Model/Type reference: HUAWEI HG655b

Listed Models: /

Ratings: DC 12V Adapter From AC 120V/60Hz

Frequency Range: From 2412 MHz to 2462 MHz

Result: Positive

M P E T E S T R E P O R T

Test Report No. : WE10100020	Dec 14,2010 Date of issue
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Equipment under Test : Home Gateway

Model /Type : HG655b

Listed Models : /

Applicant : **Huawei Technology Co.,Ltd**

Address : Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129 P.R.C

Manufacturer : **Huawei Technology Co.,Ltd**

Address : Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129 P.R.C

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○ Power Cable

Length (m) : /

Shield : /

Detachable : /

○ Multimeter

Manufacturer : /

Model No. : /

● AC Adapter

MODEL: FM120015-MX

INPUT: 100-240V~50/60Hz 0.6A

OUTPUT: 12.0V $\overline{\overline{\overline{\quad}}}$ 1.5A

Power Cable: 150cm

◇ Shield

◆ Unshield

1.2. NOTE

1. The EUT is an 802.11b/g/n Home Gateway, The functions of the EUT listed as below:

	Test Standards	Reference Report
WLAN 802.11b/g, 802.11n	FCC Part 15 Subpart C (Section15.247)	WE10100019
WLAN 802.11b/g, 802.11n	FCC Part 2.1091(b)	WE10100020

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—
802.11n(40MHz)	√	—	—	—

3. The EUT incorporates a MIMO function, Physically, the EUT provides two completed transmitter and two completed receivers.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

2.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	± 4.24 dB	(1)
Radiated Emission	1~18GHz	± 5.16 dB	(1)
Radiated Emission	18-40GHz	± 5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	± 3.39 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

3.3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

From the peak EUT RF output power, the minimum mobile separation distance, d=20cm, as well as the maximum gain of the used antenna is 2dBi, the RF power density can be obtained.

TEST RESULTS

For 802.11 b

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)
2412	20.00	22.27	168.6553	1.5849	1.0000	0.0532
2437	20.00	22.74	187.9317	1.5849	1.0000	0.0593
2462	20.00	22.52	178.6488	1.5849	1.0000	0.0563

For 802.11 g

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)
2412	20.00	21.48	140.6048	1.5849	1.0000	0.0443
2437	20.00	21.88	154.1700	1.5849	1.0000	0.0486
2462	20.00	21.68	147.2313	1.5849	1.0000	0.0464

For 802.11 n (20MHz)

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)			Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)
		Antenna 1	Antenna 2	Total				
2412	20.00	20.44	20.79	23.63	230.6123	1.5849	1.0000	0.0727
2437	20.00	20.65	20.36	23.52	224.7874	1.5849	1.0000	0.0709
2462	20.00	20.41	20.71	23.57	227.6612	1.5849	1.0000	0.0718

For 802.11 n (40MHz)

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)			Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)
		Antenna 1	Antenna 2	Total				
2422	20.00	19.87	19.13	22.53	178.8975	1.5849	1.0000	0.0564
2437	20.00	19.97	19.04	22.54	179.4794	1.5849	1.0000	0.0566
2452	20.00	19.89	19.07	22.51	178.2225	1.5849	1.0000	0.0562

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 (b) for the controlled RF Exposure.

.....**End of Report**.....