



MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)

Report Reference No.....: TRE1203005602

FCC ID.....: GCOMLK001A

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Date of issue.....: Apr 09, 2012

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

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

Applicant's name.....: ShenZhen Huapu Digital Co.,LTD

Address.....: 5/F Building 6, Huaide Cuihai Industry Zone, Fuyong, Baoan, Shenzhen, China.

Test specification:

Standard: FCC Per 47 CFR 2.1091(b)

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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Test item description: WIFI MODULE

Trade Mark: /

Operation Frequency.....: From 2400MHz to 2483.5MHz

Model/Type reference.....: MLK001A

Listed Models: MLK003A, MLK004A, MLK005A, MLK006A, MLK007A, MLK008A, MLK009A, MLK010A, MLK011A, MLK012A, MLK013A, MLK014A, MLK015A, MLK016A, MLK017A, MLK018A, MLK019A

Result.....: Positive

TEST REPORT

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Equipment under Test : WIFI MODULE

Model /Type : MLK001A

Listed Models : MLK003A,MLK004A,MLK005A,MLK006A,MLK007A,MLK008A,
MLK009A,MLK010A,MLK011A,MLK012A,MLK013A,MLK014A,
MLK015A,MLK016A,MLK017A,MLK018A,MLK019A

Applicant : **ShenZhen Huapu Digital Co.,LTD**

Address : 5'F Building 6, Huaide Cuihai Industry Zone, Fuyong, Baoan,
Shenzhen, China.

Manufacturer : **ShenZhen Huapu Digital Co.,LTD**

Address : 5'F Building 6, Huaide Cuihai Industry Zone, Fuyong, Baoan,
Shenzhen, China.

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. :	/

1.2. Power supply system utilised

Power supply voltage	:	○ 120V / 60 Hz	○ 115V / 60Hz
		○ 12 V DC	○ 24 V DC
		● Other (specified in blank below)	

DC 3.3V from USB Board

1.3. Description of the test mode

IEEE 802.11b/g/n: Eleven channels are provided to the EUT.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

1.4. NOTE

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

	Test Standards	Reference Report
WLAN 802.11b/g/n	FCC Part 15 Subpart C (Section15.247)	TRE1203005601
MPE REPORT	FCC Per 47 CFR 2.1091(b)	TRE1203005602

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 SISO function,Physically,the EUT provides one completed transmitter and one completed receiver.

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

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 TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " 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 Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

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=0.2m, as well as the gain of the used antenna is 3.5dBi, the RF power density can be obtained.

TEST RESULTS**For 802.11 b**

Test Frequency (MHz)	Minimum Separation Distance	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)	Test Results
2412	20.00	16.60	45.71	2.2387	1.000	0.0204	Pass
2437	20.00	16.77	47.53	2.2387	1.000	0.0212	Pass
2462	20.00	16.80	47.86	2.2387	1.000	0.0213	Pass

For 802.11 g

Test Frequency (MHz)	Minimum Separation Distance	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)	Test Results
2412	20.00	16.20	41.69	2.2387	1.000	0.0186	Pass
2437	20.00	15.77	37.76	2.2387	1.000	0.0168	Pass
2462	20.00	15.42	34.83	2.2387	1.000	0.0155	Pass

For 802.11 n(20MHz)

Test Frequency (MHz)	Minimum Separation Distance (20cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)	Test Results
2412	20.00	15.66	36.81	2.2387	1.000	0.0164	Pass
2437	20.00	15.38	34.51	2.2387	1.000	0.0154	Pass
2462	20.00	15.42	34.83	2.2387	1.000	0.0155	Pass

For 802.11 n(40MHz)

Test Frequency (MHz)	Minimum Separation Distance (20cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 20 cm (mW/cm ²)	Test Results
2422	20.00	15.13	32.58	2.2387	1.000	0.0145	Pass
2437	20.00	15.21	33.19	2.2387	1.000	0.0148	Pass
2452	20.00	14.87	30.69	2.2387	1.000	0.0137	Pass

4. Conclusion

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

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