



MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)

Report Reference No.: WE10100011

FCC ID: X5QGEM0357

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

Applicant's name: Jetlun(ShenZhen)Corporation

Address: 1008A Skyworth Building Gao-xin RD South High-tech Park
Nanshan District Shenzhen China

Test specification:

Standard: FCC Per 47 CFR 2.1091(b)

TRF Originator: Shenzhen Huatongwei International Inspection CO., Ltd

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Test item description: ZigBee Module

Trade Mark: /

Model/Type reference: GEM0357E

Listed Models: GEM0357F

Result: Positive

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Test Report No. :	WE10100011	Nov 08, 2010
		Date of issue

Equipment under Test : ZigBee Module

Model /Type : GEM0357E

Listed Models : GEM0357F

Applicant : **Jetlun(ShenZhen)Corporation**

Address : 1008A Skyworth Building Gao-xin RD South High-tech
Park Nanshan District Shenzhen China

Manufacturer **ZhuHai YueHua Electronic Co.,Ltd.**

Address : 13, Pingdong Road4, NanPing Science&Technology
Industrial Garden,Zhuhai,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. NOTE

1. The EUT is a an IEEE 802.15 ZigBee Standard type device, The functions of the EUT listed as below:

	Test Standards	Reference Report
Zigbee	FCC Part 15 Subpart C (Section15.247)	WE10100010
Zigbee	MPE	WE10100011

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

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
Zigbee	√	—	—	—

3. The EUT provides one completed transmitter and receiver.

Modulation Mode	TX Function
Zigbee	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 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=0.2m, as well as the gain of the used External antenna is 2.15 dBi, the Internal antenna gain is 0.5 dBi, the RF power density can be obtained.

TEST RESULTS

External

Mode	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
2405	20.00	17.55	56.89	1.995	1.000	0.023	Pass
2440	20.00	18.27	67.14	1.995	1.000	0.027	Pass
2480	20.00	0.83	1.21	1.995	1.000	0.001	Pass

Internal

Mode	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
2405	20.00	17.25	53.09	1.122	1.000	0.004	Pass
2440	20.00	18.06	63.97	1.122	1.000	0.014	Pass
2480	20.00	0.71	1.18	1.122	1.000	0.0003	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.....