# Application for FCC Certification
On behalf of

Holley Group Co., Ltd.

Product Name: 1mW ZigBee Module

Model No.: HT-MDL-Z-EM-2400-001-A-V3.0.0

Serial No.: E2009093001

FCC ID: VQMHZME3A

(MPE Calculation)

Prepared For : Holley Group Co., Ltd.
No.181 Wuchang Avenue, Yuhang District,
Hangzhou 310023, P.R.China

Prepared By :Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F09090
Date of Test : Oct 09, 2009
Date of Report : Oct 10, 2009

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# TEST REPORT FOR FCC CERTIFICATE

| | | |
|---|---|---|
| Applicant | : | Holley Group Co., Ltd. |
| Manufacturer 1# | : | Holley Group Co., Ltd. |
| Trademark 1# | : | Holley |
| Manufacturer 2# | : | Zhejiang Hornetone Information Technology Co., Ltd. |
| Trademark 2# | : | Hornetone |
| EUT Description | : | 1mW ZigBee Module |
| | (A) Model No. | : HT-MDL-Z-EM-2400-001-A-V3.0.0 |
| | (B) Serial No. | : E2009093001 |
| | (C) Power Supply | : DC 3.3V |

Test Procedure Used:

*FCC OET Bulletin 65 August 1997*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC OET Bulletin 65.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: HT-MDL-Z-EM-2400-001-A -V3.0.0, S/N: E2009093001), which was tested on Oct 09, 2009 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Oct 09, 2009 Date of Report : Oct 10, 2009

Producer : Zeno Gu
ZENO GU / Assistant

Review : Sammy Chen
SAMMY CHEN/ Assistant Manager

For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Byron Kwo
Authorized Signature EMC BYRON KWO / Manager

# 1 GENERAL INFORMATION

## 1.1 Description of Equipment Under Test

| | | |
|---|---|---|
| Description | : | 1mW ZigBee Module |
| Type of EUT | | ☑ Production ☐ Pre-product ☐ Pro-type |
| Model Number | : | HT-MDL-Z-EM-2400-001-A-V3.0.0 |
| Serial Number | : | E2009093001 |
| Applicant | : | Holley Group Co., Ltd.<br>No.181 Wuchang Avenue, Yuhang District,<br>Hangzhou 310023, P.R.China |
| Manufacturer 1# | : | Holley Group Co., Ltd.<br>No.181 Wuchang Avenue, Yuhang District,<br>Hangzhou 310023, P.R.China |
| Trademark 1# | : | Holley |
| Manufacturer 2# | : | Zhejiang Hornetone Information Technology Co., Ltd.<br>No.181 Wuchang Avenue, Yuhang District,<br>Hangzhou 310023, P.R.China |
| Trademark 2# | : | Hornetone |
| Power Supply | : | DC 3.3V (from Carry board) |
| Radio Tech | : | IEEE 802.15.4 (ZigBee®) |
| Freq. Band | : | 2405 MHz ~ 2480 MHz<br>In 5 MHz Separation |
| Tested Freq. | : | 2405 MHz (Channel 11)<br>2440 MHz (Channel 18)<br>2480 MHz (Channel 26) |
| Freq. Channel | : | 16 channels |
| Antenna1 Gain | : | 1.8dBi |
| Antenna2 Gain | : | 2.1dBi |

## 1.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

## 1.3 Measurement Uncertainty

Output Power Expanded Uncertainty : U = 0.30 dB

# 2 SUMMARY OF STANDARDS AND RESULTS

## 2.1 Applicable Standard

FCC OET Bulletin 65:1997

## 2.2 Specification Limits

Limits for General Population/Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) ($mW/cm^2$) | Averaging Time $|E|^2$, $|H|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f2)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/150 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

f = frequency in MHz *Plane-wave equivalent power density

NOTE: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

The limit value 1.0$mW/cm^2$ is available for this EUT.

## 2.3 MPE Calculation Method

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

where: S = power density (in appropriate units, e.g. $mW/ cm^2$)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

## 2.4 Calculated Result

2.4.1.1 Radio Frequency Radiation Exposure Evaluation for Antenna 1

| Frequency | Output Power to Antenna | Antenna Gain | | Power Density | Limit |
|---|---|---|---|---|---|
| (MHz) | (mW) | (dBi) | (Numeric) | ($mW/cm^2$) | ($mW/cm^2$) |
| 2405 | 2.38 | 1.8 | 1.5 | 0.00071 | 1.0 |
| 2440 | 2.21 | 1.8 | 1.5 | 0.00066 | 1.0 |
| 2480 | 1.98 | 1.8 | 1.5 | 0.00059 | 1.0 |

Separation distance R= 20cm.

2.4.1.2 Radio Frequency Radiation Exposure Evaluation for Antenna 2

| Frequency | Output Power to Antenna | Antenna Gain | | Power Density | Limit |
|---|---|---|---|---|---|
| (MHz) | (mW) | (dBi) | (Numeric) | ($mW/cm^2$) | ($mW/cm^2$) |
| 2405 | 2.38 | 2.1 | 1.6 | 0.00076 | 1.0 |
| 2440 | 2.21 | 2.1 | 1.6 | 0.00070 | 1.0 |
| 2480 | 1.98 | 2.1 | 1.6 | 0.00063 | 1.0 |

Separation distance R= 20cm.