



**TEST REPORT**

**IEC 61000-4-2-2008**

**Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test**

**Report Reference No.**.....: **SQE13090002 R/C: 60520**

Compiled by

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Date of issue.....: Sep 29, 2013

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

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

Testing location/ procedure .....: Full application of Harmonised standards   
 Partial application of Harmonised standards   
 Other standard testing methods

**Applicant's name**.....: **Hope Microelectronics co., Ltd**

Address.....: 2/F, Building 3, pingshan Private Enterprise science and Technology Park, xili Town, Nanshan District, Shenzhen, China

**Test specification:**

Standard .....: **IEC 61000-4-2: 2008**

**Test Report Form No.**.....: HTWEMCCE\_1A

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

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

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**Test item description** ..... : 24Bit Barometer sensor

Trade Mark .....: /

Manufacturer .....: Hope Microelectronics co., Ltd

Model/Type reference.....: HP203B

Listed Models.....: /

Ratings.....: /

Result.....: **Positive**

**EMC -- TEST REPORT**

<b>Test Report No. :</b>	<b>SQE13090002</b>	Sep 29, 2013
		Date of issue

Equipment under Test : 24Bit Barometer sensor

Type / Model : HP203B

Listed Models : /

**Applicant** : Hope Microelectronics co., Ltd

Address : 2/F, Building 3, pingshan Private Enterprise science and Technology Park, xili Town, Nanshan District, Shenzhen, China

**Manufacturer** : Hope Microelectronics co., Ltd

Address : 2/F, Building 3, pingshan Private Enterprise science and Technology Park, xili Town, Nanshan District, Shenzhen, China

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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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. TEST STANDARDS

The tests were performed according to following standards:

[IEC 61000-4-2-2008](#) Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

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## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample : Sep 26, 2013

Testing commenced on : Sep 26, 2013

Testing concluded on : Sep 29, 2013

### 2.2. Equipment Under Test

#### Power supply system utilised

Power supply voltage :  230V / 50 Hz                       120V / 60Hz  
 12 V DC     24 V DC  
 Other (specified in blank below)

/

### 2.3. Short description of the Equipment under Test (EUT)

The EUT is a 24Bit Barometer sensor.

Serial number: Prototype

### 2.4. EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test program (customer specific)

Immunity tests .....:According to IEC 61000-4-2, searching for the highest susceptibility.

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### 2.5. EUT configuration

No peripheral devices and interface cables were connected during the measurement.

## 2.6. Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution
- quality of data display and transmission
- quality of speech transmission

### Definition related to the performance level:

- based on the used product standard
- o based on the declaration of the manufacturer, requestor or purchaser

### Criterion A:

The apparatus shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

### Criterion B:

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

### Criterion C:

Temporary loss of function is allowed provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

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

#### **3.2. Test Facility**

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

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 01, 2012. Valid time is until Feb. 28, 2015.

##### **A2LA-Lab Cert. No. 2243.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sep. 30, 2013.

##### **FCC-Registration No.: 662850**

Shenzhen Huatongwei International Inspection 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 662850, Renewal date Jul. 01, 2009, valid time is until Jun. 01, 2015.

##### **IC-Registration No.: 5377A**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

##### **DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

### 3.3. 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>

### 3.4. Test Description

Emission Measurement		
Electrostatic Discharge	IEC 61000-4-2: 2008	PASS

Remark: The measurement uncertainty is not included in the test result.

### 3.5. Equipments Used during the Test

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	EM TEST	DITOC0103Z	0301-04	2012/10

### 3.6. Electrostatic discharge

For test instruments and accessories used see section 3.6.

#### 3.6.1. Description of the test location and date

Test location: Shielded room No.1

Date of test: Sep 26, 2013

Operator: Chang Xu

#### 3.6.2. Severity levels of electrostatic discharge

3.6.2.1. Severity level: Contact Discharge at  $\pm 2KV, \pm 4KV$

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

3.6.2.1. Performance criterion: **B**



### 3.6.3. Description of the test set-up

#### 3.6.3.1. Operating Condition

The EUT is turned off during the test, and the results of the maximum susceptibility are recorded.

#### 3.6.3.2. Test Configuration and Procedure:

Direct Discharge:

Contact Discharge:

- All the procedure shall be same as air discharge, except using the acute discharge tip. The top end of the Electrostatic Discharge simulator is touch the EUT all the time when the simulator is re-triggered for a new single discharge and repeated 10 times for each pre-selected test point.

Indirect Discharge:

- The vertical coupling plane(VCP) is placed 0.1m away from EUT. The top end of Electrostatic Discharge simulator should aim at the center of one border of the VCP for at least 10 times discharge.
- The top end of Electrostatic Discharge simulator should place at the point 0.1m away from EUT on the horizontal coupling plane(HCP). At least 10 times discharge should be done for every pre-selected point around EUT.

Record any performance degradation of the EUT during the test and judge the test result according to nce criterion.

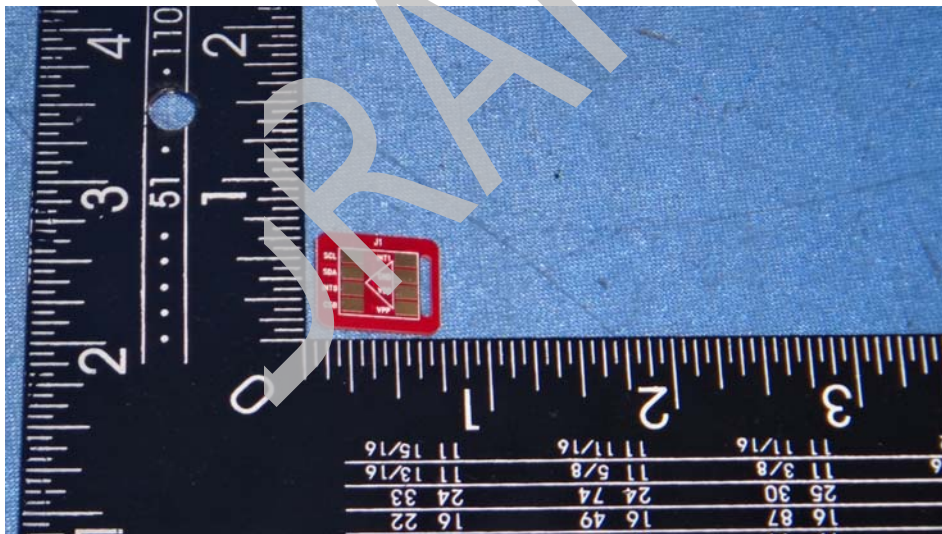
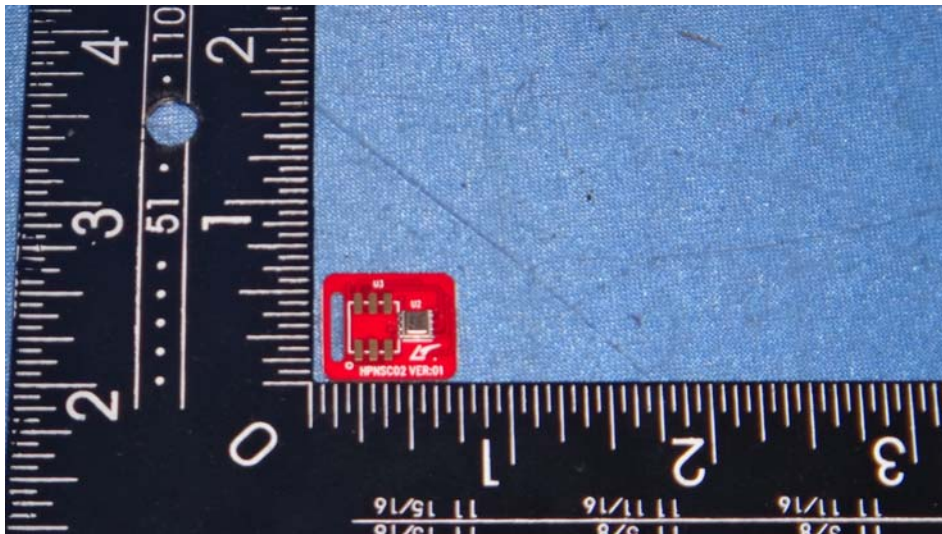
#### 3.6.3.3. Photo of the test set-up



**3.6.4. Test specification:**Contact discharge voltage: 2 kV       4 kV       6 kVAir discharge voltage: 2 kV       4 kV       8 kVNumber of discharges: 10       25Type of discharge:Direct discharge       Air discharge  
    Contact discharge  
Indirect discharge       Contact dischargePolarity: Positive       NegativeDischarge location: Sensor Jointing points  
 horizontal coupling plane (HCP)  
 vertical coupling plane (VCP)**3.6.5. Test result**The requirements are **Fulfilled**Performance Criterion: **B**

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#### 4. Photos of the EUT



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