



**RADIO FREQUENCY EMISSIONS TEST REPORT**

**FOR**

**HEART RATE TRANSMITTER**

**MODEL NUMBER: QX-HS2**

**FCC ID: BBQHRM-1**

**REPORT NUMBER: 05I3583-1**

**ISSUE DATE: AUGUST 9, 2005**

*Prepared for*  
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**SHIBUYA-KU, TOKYO 151-8543**  
**JAPAN**

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**LAB CODE:200065-0**

Revision History

| <u>Rev.</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|------------------|-------------------|
| A           | Initial Issue    | Thu               |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** CASIO COMPUTER CO.,Ltd.  
6-2. HONMACHI 1-CHOME  
SHIBUYA-KU, TOKYO 151-8543  
JAPAN

**EUT DESCRIPTION:** HEART RATE TRANSMITTER

**MODEL:** QX-HS2

**SERIAL NUMBER:** 01574

**DATE TESTED:** August 2, 2005

| APPLICABLE STANDARDS  |                      |
|-----------------------|----------------------|
| STANDARD              | TEST RESULTS         |
| FCC PART 15 SUBPART B | NON-COMPLIANCE NOTED |

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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THANH NGUYEN  
EMC TECHNICIAN  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                           | UNCERTAINTY    |
|-------------------------------------|----------------|
| Radiated Emission, 30 to 200 MHz    | +/- 3.3 dB     |
| Radiated Emission, 200 to 1000 MHz  | +4.5 / -2.9 dB |
| Radiated Emission, 1000 to 2000 MHz | +4.5 / -2.9 dB |
| Power Line Conducted Emission       | +/- 2.9 dB     |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a 131 kHz Transmitter, use to transmit the heart rate in sports.

## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST           |                 |                  |               |            |
|-------------------------------|-----------------|------------------|---------------|------------|
| Description                   | Manufacturer    | Model            | Serial Number | Cal Due    |
| RF Filter Section             | HP              | 85420E           | 3705A00256    | 11/21/2005 |
| EMI Receiver, 9 kHz ~ 2.9 GHz | HP              | 8542E            | 3942A00286    | 11/21/2005 |
| Bilog Antenna                 | Sunol Sciences  | JB1              | A121003       | 3/6/2006   |
| EMI Test Receiver             | Rohde & Schwarz | ESHS20           | 827129/006    | 10/22/2005 |
| LISN, 10 kHz ~ 30 MHz         | Fisher          | 50/250-25-2      | 114           | 10/21/2005 |
| LISN, 10 kHz ~ 30 MHz         | Solar           | 8012-50-R-24-BNC | 2593          | 10/21/2005 |
| Active Loop Antenna           | EMCO            | 6502             | 9202-2722     | 9/7/2006   |

## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. RADIATED EMISSIONS RELATIVE TO CLASS B LIMITS

#### TEST PROCEDURE

ANSI C63.4

#### LIMIT

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Limits for radiated disturbance of Class B ITE at measuring distance of 3 m |                                     |
|-----------------------------------------------------------------------------|-------------------------------------|
| Frequency range<br>(MHz)                                                    | Quasi-peak limits<br>(dB $\mu$ V/m) |
| 30 to 88                                                                    | 40                                  |
| 88 to 216                                                                   | 43.5                                |
| 216 to 960                                                                  | 46                                  |
| Above 960 MHz                                                               | 54                                  |
| Note: The lower limit shall apply at the transition frequency.              |                                     |

#### RESULTS

No Non-Compliant Noted

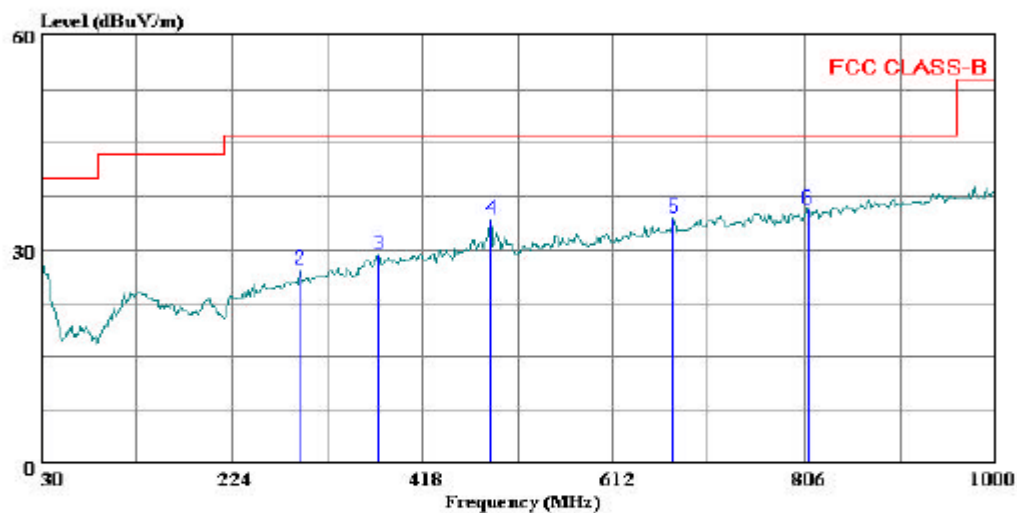
**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**

HORIZONTAL PLOT



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 2 File#: Trans.EMI Date: 08-02-2005 Time: 10:20:17



(Auxiliary ATC)

Trace: 1

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
Test Operator: : Thanh Nguyen  
Project #: : 05I3583-1  
Company: : SEIKO INSTRUMENTS INC.  
EUT: : Heart rate Monitor(Watch&Heart Trans.set  
Model No. : CHR-200  
Configuration : EUT only  
Target of Test : FCC Class B  
Mode of Operation: Normal Mode

HORIZONTAL DATA

|   | Freq    | Read<br>Level | Factor | Level  | Limit<br>Line | Over<br>Limit | Remark |
|---|---------|---------------|--------|--------|---------------|---------------|--------|
|   | MHz     | dBuV          | dB     | dBuV/m | dBuV/m        | dB            |        |
| 1 | 30.000  | 8.32          | 20.45  | 28.77  | 40.00         | -11.23        | Peak   |
| 2 | 293.840 | 11.82         | 15.42  | 27.24  | 46.00         | -18.76        | Peak   |
| 3 | 373.380 | 11.87         | 17.46  | 29.33  | 46.00         | -16.67        | Peak   |
| 4 | 487.840 | 14.20         | 20.00  | 34.20  | 46.00         | -11.80        | Peak   |
| 5 | 674.080 | 11.66         | 22.71  | 34.37  | 46.00         | -11.63        | Peak   |
| 6 | 808.910 | 10.93         | 24.71  | 35.64  | 46.00         | -10.36        | Peak   |

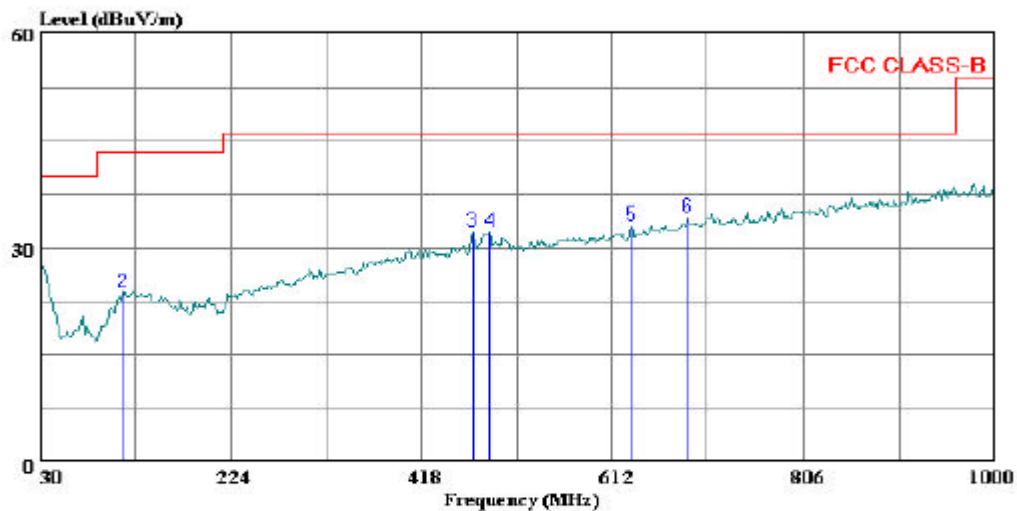
**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL PLOT



561F Monterey Road  
Morgan Hill, CA 95037  
Tel: (408) 463-0888  
Fax: (408) 463-0885

Data#: 4 File#: Trans.EMI Date: 08-02-2005 Time: 10:27:27



(Auxiliary ATC)

Trace: 3

Ref Trace:

Condition: FCC CLASS-B VERTICAL  
Test Operator: : Thanh Nguyen  
Project #: : 05I3583-1  
Company: : SEIKO INSTRUMENTS INC.  
EUT: : Heart rate Monitor(Watch&Heart Trans.set  
Model No. : CHR-200  
Configuration : EUT only  
Target of Test : FCC Class B  
Mode of Operation: Normal Mode

|   |         | Read  |        |        | Limit  | Over   |        |
|---|---------|-------|--------|--------|--------|--------|--------|
|   | Freq    | Level | Factor | Level  | Line   | Limit  | Remark |
|   | MHz     | dBuV  | dB     | dBuV/m | dBuV/m | dB     |        |
| 1 | 30.000  | 8.96  | 20.45  | 29.41  | 40.00  | -10.59 | Peak   |
| 2 | 115.360 | 9.15  | 14.60  | 23.75  | 43.50  | -19.75 | Peak   |
| 3 | 470.380 | 12.60 | 19.65  | 32.25  | 46.00  | -13.75 | Peak   |
| 4 | 487.840 | 12.25 | 20.00  | 32.25  | 46.00  | -13.75 | Peak   |
| 5 | 632.370 | 10.91 | 22.03  | 32.94  | 46.00  | -13.06 | Peak   |
| 6 | 688.630 | 11.41 | 22.87  | 34.28  | 46.00  | -11.72 | Peak   |

## 7.2. RADIATED EMISSIONS BELOW 30 MHZ

### TEST PROCEDURE

ANSI C63.4

### LIMIT

The field strength of radiated emissions from an intentional radiator, shall not exceed the following, for frequencies below 30 MHz:

| Frequency range<br>(MHz)                                       | Limits<br>( $\mu$ V/m) | Measurement Distance<br>(meters) |
|----------------------------------------------------------------|------------------------|----------------------------------|
| 0.009 – 0.490                                                  | 2400 / F (kHz)         | 300                              |
| 0.490 – 1.705                                                  | 24000 / F (kHz)        | 30                               |
| 1.705 – 30.0                                                   | 30                     | 30                               |
| Note: The lower limit shall apply at the transition frequency. |                        |                                  |

Testing was done at a distance of 10m, and an extrapolation factor of 40 dB / decade was applied to readings.

### RESULTS

No Non-Compliant Noted

| FCC Part 15, Subpart B & C      10 Meter Distance Measurement At Open Field                                                                                                                                                                                                      |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|------------|-----------------------------|----------------------------------|----------------------------------|----------------------|----------------------|-------------------|-------------------|--------------|
| Company: Casio Computer Co., Ltd.                                                                                                                                                                                                                                                |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Project #: 0513583                                                                                                                                                                                                                                                               |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Model #: CHR-200                                                                                                                                                                                                                                                                 |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Tester: Thanh Nguyen                                                                                                                                                                                                                                                             |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Date: August 02, 2005                                                                                                                                                                                                                                                            |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Frequency<br>(MHz)                                                                                                                                                                                                                                                               | PK<br>(dBuV) | QP<br>(dBuV) | AV<br>(dBuV) | AF<br>dB/m | Distance<br>Correction (dB) | PK Corrected<br>Reading (dBuV/m) | AV Corrected<br>Reading (dBuV/m) | QP Limit<br>(dBuV/m) | AV Limit<br>(dBuV/m) | PK Margin<br>(dB) | AV Margin<br>(dB) | Notes        |
| Loop Antenna Face On:                                                                                                                                                                                                                                                            |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| 0.131                                                                                                                                                                                                                                                                            | 42.1         |              | 42.1         | 10.48      | -59.08                      | -8.51                            | -8.51                            | 45.26                | 25.26                | -51.8             | -31.8             | 10m distance |
| 0.262                                                                                                                                                                                                                                                                            | 31.25        |              | 31.25        | 10.38      | -59.08                      | -17.46                           | -17.46                           | 39.24                | 19.24                | -56.7             | -36.7             | 10m distance |
| 0.393                                                                                                                                                                                                                                                                            | 33.5         |              | 33.5         | 10.28      | -59.08                      | -15.30                           | -15.30                           | 35.72                | 15.72                | -51.0             | -31.0             | 10m distance |
| Loop Antenna Face Off:                                                                                                                                                                                                                                                           |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| 0.131                                                                                                                                                                                                                                                                            | 31.8         |              | 31.8         | 10.48      | -59.08                      | -17.01                           | -17.01                           | 45.26                | 25.26                | -62.3             | -42.3             | 10m distance |
| 0.262                                                                                                                                                                                                                                                                            | 28.8         |              | 28.8         | 10.38      | -59.08                      | -19.91                           | -19.91                           | 39.24                | 19.24                | -59.1             | -39.1             | 10m distance |
| * No more emissions were found up to 30MHz                                                                                                                                                                                                                                       |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| <u>Note:</u> The emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 Mhz. Radiated emission limits in these three bands are based on measurements employing an average detector. |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| P.K. = Peak                                                                                                                                                                                                                                                                      |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| Q.P. = Quasi Peak Reading                                                                                                                                                                                                                                                        |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |
| A.F. = Antenna factor                                                                                                                                                                                                                                                            |              |              |              |            |                             |                                  |                                  |                      |                      |                   |                   |              |

(Note: The setup photos on pages 14 to 16 have been extracted as a separate file.)