

Maximum Permissible Exposure (MPE) Evaluation Report

Report No. : TS13090055-EME

Model No. : S7200HRT

Issued Date : Dec. 02, 2013

Applicant: Johnson Health Tech. Co., Ltd
No. 26, Ching Chung Rd., Taya District, Taichung City
428, Taiwan

Test Method/ Standard: FCC 1.1310

Test By: Intertek Testing Services Taiwan Ltd.
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The test report was prepared by:

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Candy Liu / Assistant

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Arthur Tsai / Senior Engineer

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Summary of Tests

MPE Evaluation meet FCC OET No. 65: 1997, IEEE C95.1-2005

| Test | Reference | Results |
|----------------|--|----------|
| MPE Evaluation | FCC Guidelines for Human Exposure IEEE C95.1 | Complies |

1. General information

1.1 Identification of the EUT

| | |
|----------------------------|--|
| Product: | LED Console for Exercise Machine |
| Model No.: | S7200HRT |
| FCC ID.: | TN7VEPS7200 |
| Frequency Range: | 2405MHz~2475MHz |
| Channel Number: | 8 channels for 2405MHz~2475MHz |
| Frequency of Each Channel: | Channel 0: 2410 MHz, Channel 1: 2420 Mhz, Channel 2: 2430 MHz, Channel 3: 2450 MHz, Channel 4: 2460 MHz, Channel 5: 2405 Mhz, Channel 6: 2475 MHz, Channel 7: 2440 MHz |
| Type of Modulation: | GFSK |
| Rated Power: | DC 12 V from Display test |
| Power Cord: | N/A |
| Data Cable: | RJ-45 UTP Cat.5 0.5 meter × 1 |
| Sample Received: | Jul. 25, 2013 |
| Test Date(s): | Sep. 25, 2013~Oct. 04, 2013 |
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| Note 2: | When determining the test conclusion, the Measurement Uncertainty of test has been considered. |



1.2 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain : 0 dBi
Antenna Type : Monopole Antenna
Connector Type : Fixed

1.3 Peripherals equipment

| Peripherals | Brand | Model No. | Serial No. | Description of Data Cable |
|--------------|------------------------------|-----------|------------|----------------------------------|
| Display Test | N/A | 960701 | N/A | RJ-45 UTP Cat.5 0.5 meter × 1 |
| Adapter | Elementech Internation Co | Au-7991n | R53240 | N/A |

2. Test specifications

2.1 Introduction

The EUT operates in the 2.4 GHz.

Unless specifically required by the *published RF exposure KDB procedures*, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding *SAR Exclusion Threshold* condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum *test separation distance* required for the exposure conditions. The minimum *test separation distance* is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander. To qualify for SAR test exclusion, the *test separation distances* applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required *published RF exposure KDB procedures*. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion.

2.2 RF Exposure Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

| MHz | 5 | 10 | 15 | 20 | 25 | mm |
|------|-----|-----|-----|-----|-----|-----------------------------------|
| 150 | 39 | 77 | 116 | 155 | 194 | SAR Test Exclusion Threshold (mW) |
| 300 | 27 | 55 | 82 | 110 | 137 | |
| 450 | 22 | 45 | 67 | 89 | 112 | |
| 835 | 16 | 33 | 49 | 66 | 82 | |
| 900 | 16 | 32 | 47 | 63 | 79 | |
| 1500 | 12 | 24 | 37 | 49 | 61 | |
| 1900 | 11 | 22 | 33 | 44 | 54 | |
| 2450 | 10 | 19 | 29 | 38 | 48 | |
| 3600 | 8 | 16 | 24 | 32 | 40 | |
| 5200 | 7 | 13 | 20 | 26 | 33 | |
| 5400 | 6 | 13 | 19 | 26 | 32 | |
| 5800 | 6 | 12 | 19 | 25 | 31 | |
| MHz | 30 | 35 | 40 | 45 | 50 | mm |
| 150 | 232 | 271 | 310 | 349 | 387 | SAR Test Exclusion Threshold (mW) |
| 300 | 164 | 192 | 219 | 246 | 274 | |
| 450 | 134 | 157 | 179 | 201 | 224 | |
| 835 | 98 | 115 | 131 | 148 | 164 | |
| 900 | 95 | 111 | 126 | 142 | 158 | |
| 1500 | 73 | 86 | 98 | 110 | 122 | |
| 1900 | 65 | 76 | 87 | 98 | 109 | |
| 2450 | 57 | 67 | 77 | 86 | 96 | |
| 3600 | 47 | 55 | 63 | 71 | 79 | |
| 5200 | 39 | 46 | 53 | 59 | 66 | |
| 5400 | 39 | 45 | 52 | 58 | 65 | |
| 5800 | 37 | 44 | 50 | 56 | 62 | |

Note: 10-g Extremity SAR Test Exclusion Power Thresholds are 2.5 times higher than the 1-g SAR Test Exclusion Thresholds indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and > 50 mm

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table.

| MHz | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | mm |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|----|
| 100 | 474 | 481 | 487 | 494 | 501 | 507 | 514 | 521 | 527 | 534 | 541 | 547 | 554 | 561 | 567 | mW |
| 150 | 387 | 397 | 407 | 417 | 427 | 437 | 447 | 457 | 467 | 477 | 487 | 497 | 507 | 517 | 527 | |
| 300 | 274 | 294 | 314 | 334 | 354 | 374 | 394 | 414 | 434 | 454 | 474 | 494 | 514 | 534 | 554 | |
| 450 | 224 | 254 | 284 | 314 | 344 | 374 | 404 | 434 | 464 | 494 | 524 | 554 | 584 | 614 | 644 | |
| 835 | 164 | 220 | 275 | 331 | 387 | 442 | 498 | 554 | 609 | 665 | 721 | 776 | 832 | 888 | 943 | |
| 900 | 158 | 218 | 278 | 338 | 398 | 458 | 518 | 578 | 638 | 698 | 758 | 818 | 878 | 938 | 998 | |
| 1500 | 122 | 222 | 322 | 422 | 522 | 622 | 722 | 822 | 922 | 1022 | 1122 | 1222 | 1322 | 1422 | 1522 | |
| 1900 | 109 | 209 | 309 | 409 | 509 | 609 | 709 | 809 | 909 | 1009 | 1109 | 1209 | 1309 | 1409 | 1509 | |
| 2450 | 96 | 196 | 296 | 396 | 496 | 596 | 696 | 796 | 896 | 996 | 1096 | 1196 | 1296 | 1396 | 1496 | |
| 3600 | 79 | 179 | 279 | 379 | 479 | 579 | 679 | 779 | 879 | 979 | 1079 | 1179 | 1279 | 1379 | 1479 | |
| 5200 | 66 | 166 | 266 | 366 | 466 | 566 | 666 | 766 | 866 | 966 | 1066 | 1166 | 1266 | 1366 | 1466 | |
| 5400 | 65 | 165 | 265 | 365 | 465 | 565 | 665 | 765 | 865 | 965 | 1065 | 1165 | 1265 | 1365 | 1465 | |
| 5800 | 62 | 162 | 262 | 362 | 462 | 562 | 662 | 762 | 862 | 962 | 1062 | 1162 | 1262 | 1362 | 1462 | |

SAR Test Exclusion Thresholds for < 100 MHz and < 200 mm

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table.

| MHz | < 50 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | mm |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|
| 100 | 237 | 474 | 481 | 487 | 494 | 501 | 507 | 514 | 521 | 527 | 534 | 541 | 547 | 554 | 561 | 567 | mW |
| 50 | 308 | 617 | 625 | 634 | 643 | 651 | 660 | 669 | 677 | 686 | 695 | 703 | 712 | 721 | 729 | 738 | |
| 10 | 474 | 948 | 961 | 975 | 988 | 1001 | 1015 | 1028 | 1041 | 1055 | 1068 | 1081 | 1095 | 1108 | 1121 | 1135 | |
| 1 | 711 | 1422 | 1442 | 1462 | 1482 | 1502 | 1522 | 1542 | 1562 | 1582 | 1602 | 1622 | 1642 | 1662 | 1682 | 1702 | |
| 0.1 | 948 | 1896 | 1923 | 1949 | 1976 | 2003 | 2029 | 2056 | 2083 | 2109 | 2136 | 2163 | 2189 | 2216 | 2243 | 2269 | |
| 0.05 | 1019 | 2039 | 2067 | 2096 | 2125 | 2153 | 2182 | 2211 | 2239 | 2268 | 2297 | 2325 | 2354 | 2383 | 2411 | 2440 | |
| 0.01 | 1185 | 2370 | 2403 | 2437 | 2470 | 2503 | 2537 | 2570 | 2603 | 2637 | 2670 | 2703 | 2737 | 2770 | 2803 | 2837 | |

2.3 RF Exposure calculations

From §FCC 1.1310 table 1, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/(cm²) (or 10 W/m²)*

Power density (S) is calculated by the following formula:

$$S = (P * G) / 4\pi R^2$$

where, S = Power density (mW/cm²)

P = Output power to antenna (mW)

R = Distance between radiating structure and observation point (cm)

G = Gain of antenna in numeric

$\pi = 3.1416$

Example:

Assume a mobile device operates at 2412MHz and its maximum output power is 50mW, and the maximum gain of antenna is 1 (numeric) /0dBi.

then the power density (S) = $(50 * 1) / 4 * \pi * 20^2 = 0.00995$ (mW/cm²) (or = 0.0995 W/m²)

2.4 Operation mode

The EUT was supplied with DC 12 V from Display test.

TX-Mode base on main board connect display test with RJ-45, and execute directly when power on.

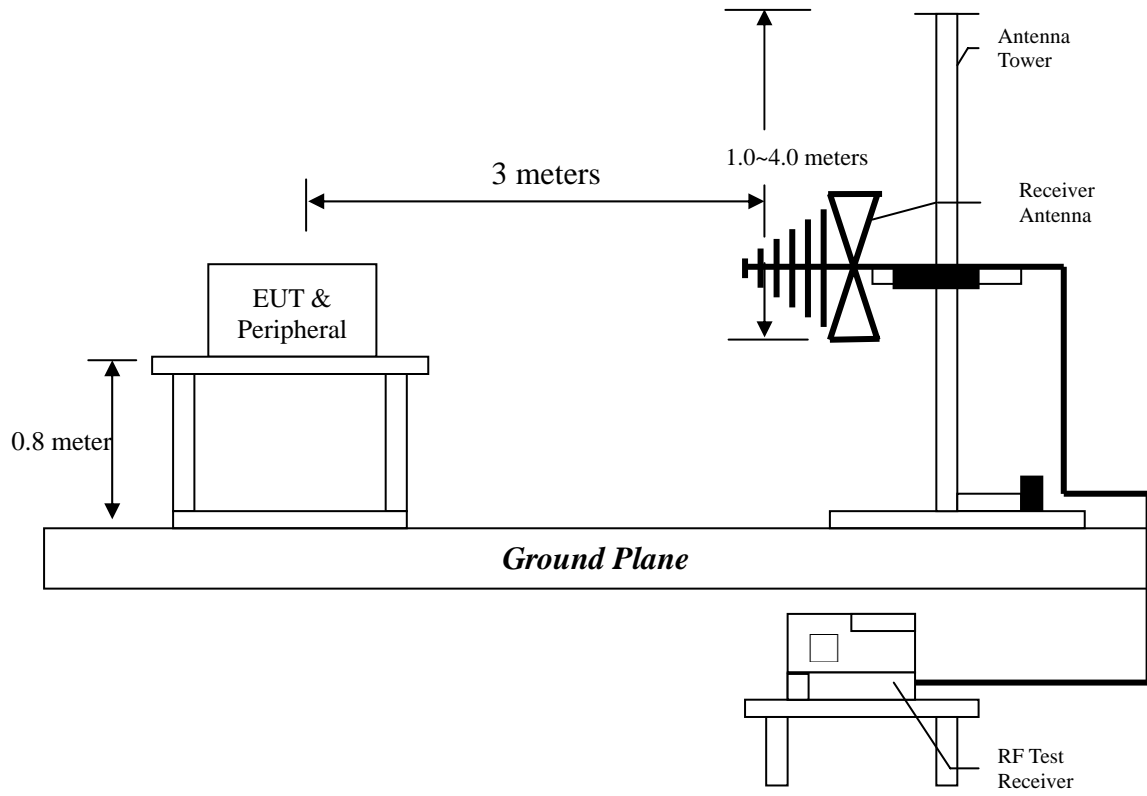
With individual verifying, the maximum output power was found out 1 Mbps data rate in GFSK mode. The final tests were executed under the conditions recorded in this report individually.

2.5 Test equipment

| Equipment | Brand | Model No. | Serial No. | Calibration Date | Next Calibration Date |
|----------------------|-----------------|-------------------------------|------------|------------------|-----------------------|
| EMI Test Receiver | Rohde & Schwarz | ESCI | 100018 | 2012/11/30 | 2013/11/29 |
| Spectrum Analyzer | Rohde&schwarz | FSP30 | 100137 | 2013/06/21 | 2014/06/21 |
| Spectrum Analyzer | Rohde&schwarz | FSEK30 | 100186 | 2013/01/23 | 2014/01/23 |
| Horn Antenna (1-18G) | Schwarzbeck | BBHA 9120 D | 9120D-456 | 2012/09/03 | 2014/09/03 |
| Broadband Antenna | SCHWARZBECK | VULB 9168 | 9168-172 | 2013/08/08 | 2015/08/08 |
| Pre-Amplifier | MITEQ | AFS44-00102650 --42-10P-44 | 1495287 | 2011/10/27 | 2013/10/26 |
| Pre-Amplifier | MITEQ | JS4-26004000--2 7-8A | 828825 | 2012/9/18 | 2014/9/18 |

Note: The above equipments are within the valid calibration period.

2.6 Test Set-up





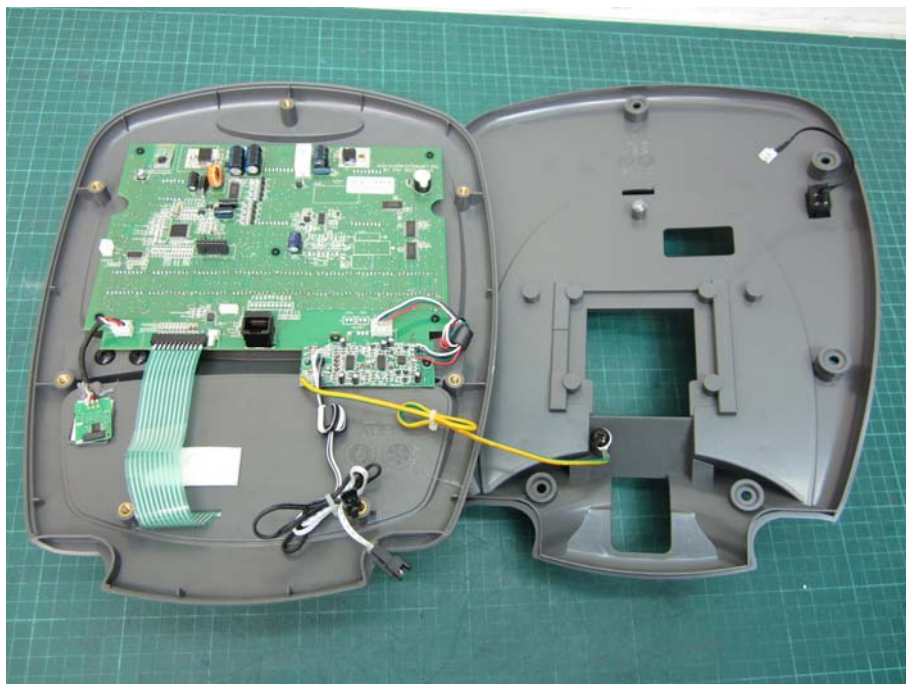
3. Test results

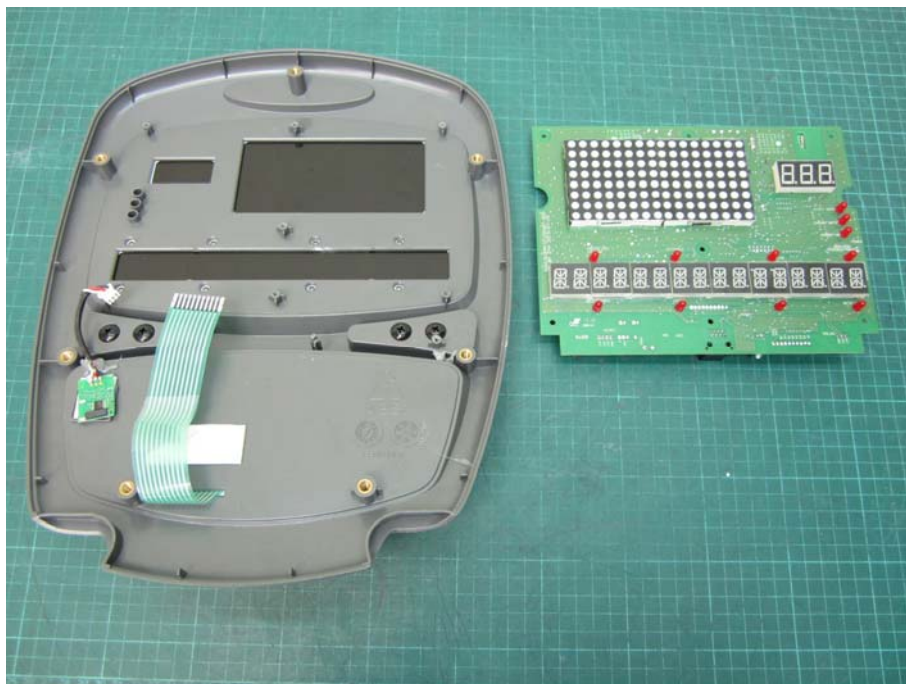
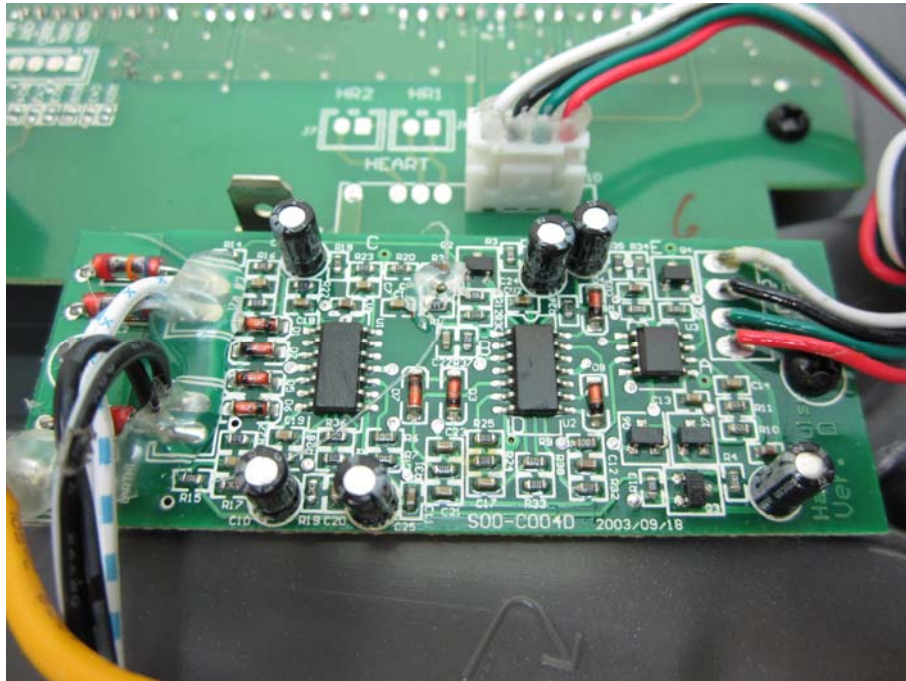
The EUT is a mobile device with the max. peak output power 90.73 dBuV/m at 3m (0.355 mW) much lower than the low threshold 96 mW at 50mm.

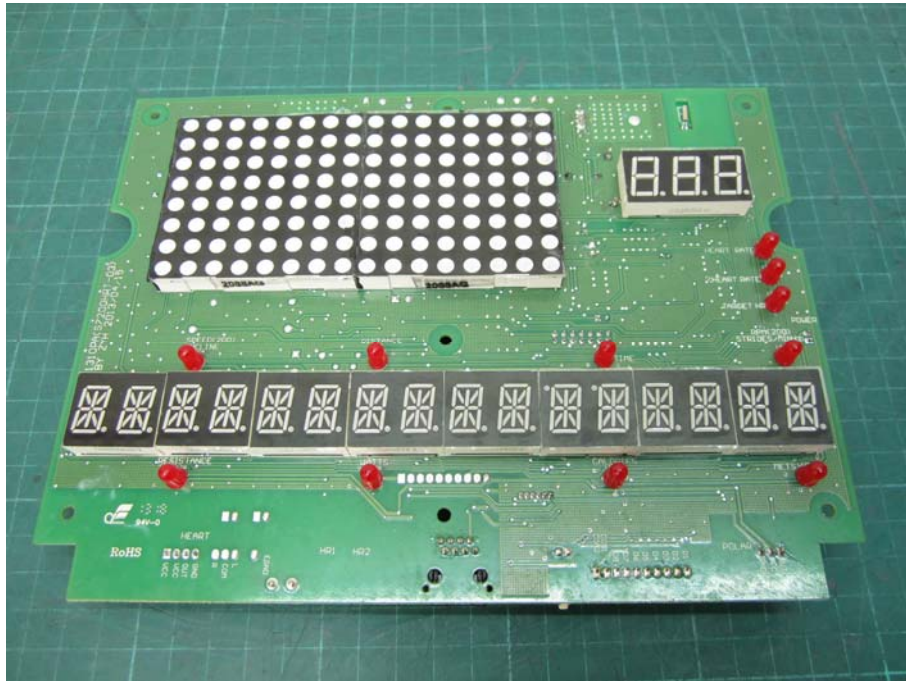
Appendix A1: External photo of EUT



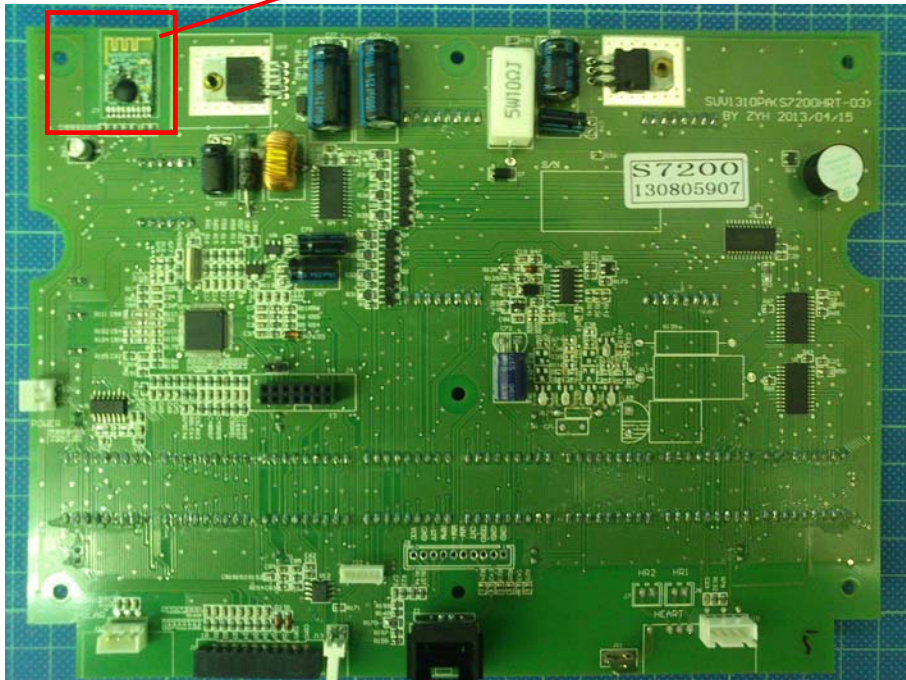
Appendix A2: Internal photo of EUT







Antenna



Appendix B1: Test Set-up

