**SGS-CSTC Standards Technical Services（Shanghai） Co., Ltd.**

No. 588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 61915666
Fax: +86 (0) 21 61915678
ee.shanghai@sgs.com



# *FCC MPE REPORT*

**Application No.:** SHEM1209001334RF

**Address of Applicant:** Audio Partnership Plc

## Equipment Under Test (EUT):

**NOTE:** The following sample(s) submitted was/were identified on behalf of the client as

| | |
|---|---|
| ***EUT Name:*** | Wireless Music System |
| **Model No.:** | Air 200 |
| **FCC ID:** | YKBMA200-003 |
| **IC:** | 9095A-MA200003 |
| **Standards**: | FCC Rules 47 CFR §2.1091 & FCC OET Bulletin 65 supplement C |
| **Date of Receipt**: | September 13, 2012 |
| **Date of Test**: | September 14, 2012 to October 20 , 2012 |
| **Date of Issue**: | October 25, 2012 |
| **Test Result :** | **PASS*** |

* In the configuration tested, the EUT complied with the standards specified above.

E&E Section Head
SGS-CSTC(Shanghai) Co., Ltd.

E&E EMC Engineer
SGS-CSTC(Shanghai) Co., Ltd.

# 2 Contents

# 3 General Information

## 3.1 Client Information

| | |
|---|---|
| Applicant: | Audio Partnership Plc |
| Address of Applicant: | Gallery Court, Hankey Place London, SE1 4BB United Kingdom |
| Manufacturer: | Audio Partnership Plc |
| Address of Manufacturer: | Gallery Court, Hankey Place London, SE1 4BB United Kingdom |
| Factory: | Hansong(Nanjing) Technology Ltd. |

## 3.2 General Description of EUT (Equipment Under Test)

| | |
|---|---|
| Product Name: | Wireless Music System |
| Model No.(EUT): | Air 200 |
| Add Model No.: | N/A |
| Model Difference: | N/A |
| Trade Mark: | Cambridge Audio |
| Supported Frequency Bands: | WiFi (802.11 b/g): 2.412 to 2.462GHz<br>Bluetooth(BT): 2.402GHz to 2.480GHz |

## 3.3 Details of E.U.T.

**Technical Specifications:**

| | |
|---|---|
| Modulation Technique: | ☒ 802.11b: DSSS<br>☒ 802.11g: OFDM<br>☒ Bluetooth 3.0 EDR |
| Modulation Type: | ☒ 802.11b: DSSS(CCK, DQPSK, DBPSK)<br>☒ 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)<br>☒ Bluetooth: GFSK, π/4DQPSK, 8DPSK |
| Equipment classification: | ☒ equipment for fixed use |
| Antenna Gain: | 2.0 dBi |

**Power Supply:**

| | |
|---|---|
| Rated Input: | 100-230VAC, 50/60Hz |
| Power Cable: | 2 wires |
| | 1.5m |

## 3.4 Test Location

All tests were performed at SGS E&E EMC lab

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.
Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

## 3.5 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

# 4 Test Standards and Limits

The Equipment under Test (EUT) has been tested at SGS's (own or subcontracted) laboratories.

The following table summarizes the specific reference documents such as harmonized standards or test specifications which were used for testing as SGS's (own or subcontracted) laboratories.

| Identity | Document Title | Version |
|---|---|---|
| FCC OET Bulletin 65 supplement C | Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields | 2001 |

In the configuration tested, the EUT complied with the standards specified above.

FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

**(B) 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 | ($180/f^2$)* | 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

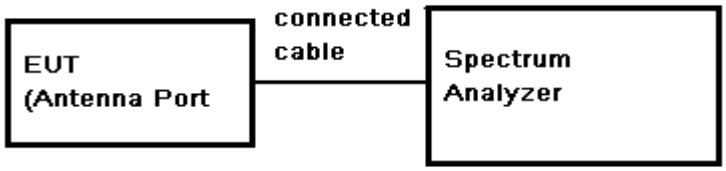
# 5 Measurement and Calculation

## 5.1 Maximum transmit power

**Test Date:** September 24, 2012

**EUT Operation:** Test in fixing frequency operating mode at lowest, middle and highest frequency.

**Test Configuration:**




**Test Results**

**WiFi-Antenna A maximum power**

| Tx frequency (MHz) | Antenna Gain (dB) | Max Test level (dBm) | | P(power) e.i.r.p. (dBm) | Max. Out Power (mW) |
|---|---|---|---|---|---|
| | | Cable loss (dB) | Read level (dBm) | | |
| 2412 | 2.0 | 0.6 | 23.20 | 25.80 | 380.19 |
| 2437 | 2.0 | 0.6 | 23.96 | 26.56 | 452.90 |
| 2462 | 2.0 | 0.6 | 23.78 | 26.38 | 434.51 |

**WiFi-Antenna B maximum Power**

| Tx frequency (MHz) | Antenna Gain (dB) | Max Test level (dBm) | | P(power) e.i.r.p. (dBm) | Max. Out Power (mW) |
|---|---|---|---|---|---|
| | | Cable loss (dB) | Read level (dBm) | | |
| 2412 | 2.0 | 0.6 | 23.65 | 26.25 | 421.70 |
| 2437 | 2.0 | 0.6 | 23.74 | 26.34 | 430.53 |
| 2462 | 2.0 | 0.6 | 23.75 | 26.35 | 431.52 |

**BT maximum Power.**

| Tx frequency (MHz) | Antenna Gain (dB) | Max Test level (dBm) | | P(power) e.i.r.p. (dBm) | Max. Out Power (mW) |
|---|---|---|---|---|---|
| | | Cable loss (dB) | Read level (dBm) | | |
| 2402 | 2.0 | 0.6 | 0.35 | 2.95 | 1.97 |
| 2441 | 2.0 | 0.6 | 0.04 | 2.64 | 1.84 |
| 2480 | 2.0 | 0.6 | 0.27 | 2.87 | 1.94 |

## 5.2 SAR Calculation

For Antenna A:

**Test Results:** MPE Limit Calculation: the EUT's operating frequencies 2412MHz to 2462MHz; the highest power is Middle channel(2437MHz). The Measured maximum radiated power is 26.56 dBm(452.90mW).with maximum peak gain is 2.0dBi. Duty factor is 100%

Equation from page 18 of OET 65, Edition 97-01

$S = PG * \text{Duty factor} / 4\pi R^2$

P =Power Input to antenna (452.90mWatts)
G =Antenna Gain (1.585numeric)
R = distance to the center of radiation of antenna (in meter) = 20cm
$S_{WiFi-A} = (452.90 * 1.585 * 1)/ (4\pi * 20^2) =$ **0.143mW/cm²**

For Antenna B:

**Test Results:** MPE Limit Calculation: the EUT's operating frequencies 2412MHz to 2462MHz; the highest power is Hight channel(2462MHz). The Measured maximum radiated power is 26.35 dBm(431.52mW).with maximum peak gain is 2.0dBi. Duty factor is 100%

Equation from page 18 of OET 65, Edition 97-01

$S = PG * \text{Duty factor} / 4\pi R^2$

P =Power Input to antenna (431.52mWatts)
G =Antenna Gain (1.585numeric)
R = distance to the center of radiation of antenna (in meter) = 20cm
$S_{WiFi-B} = (431.52 * 1.585 * 1)/ (4\pi * 20^2) =$ **0.136mW/cm²**

MPE limit = 1.0mW/cm²

For BT:

**Test Results:** MPE Limit Calculation: the EUT's operating frequencies 2412MHz to 2480MHz; the highest power is Low channel(2402MHz). The Measured maximum radiated power is 2.95 dBm(1.97mW).with maximum peak gain is 2.0dBi. Duty factor is 100%

Equation from page 18 of OET 65, Edition 97-01

$S = PG^* \text{ Duty factor} / 4\pi R^2$

P =Power Input to antenna (1.97mWatts)

G =Antenna Gain (1.585numeric)

R = distance to the center of radiation of antenna (in meter) = 20cm

$S = (1.97 * 1.585 * 1) / (4\pi * 20^2) =$ **0.001mW/cm²**

So the maximum $S_{max} = S_{WiFi-A} + S_{BT} = 0.143 + 0.001 = 0.144 W/m^2 < 1 mW/cm^2$

Note:

1) P (Watts)= $10^{\frac{dBm}{10}}$ / 1000

2) G (Antenna gain in numeric) = 10^ (Antenna gain in dBi /10)

3) MPE limit = 1mW/cm²

***THE END OF REPORT***