



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

588 West Jindu Road, Songjiang District, Shanghai, China  
Telephone: +86 (0) 21 6191 5666  
Fax: +86 (0) 21 6191 5678  
ee.shanghai@sgs.com

Report No.: SHEM150100012404  
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## 1 Cover Page

# FCC MPE REPORT

Application No.:	SHEM1501000124CR
Applicant:	Hansong (Nanjing) Technology Ltd.
FCC ID:	XCO-CONNECT
IC:	7756A-CONNECT
<b>Equipment Under Test (EUT):</b> <b>NOTE:</b> The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Wireless Transmitter
Model No.(EUT):	Dynaudio Connect
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance
Date of Receipt:	January 16, 2015
Date of Test:	February 04, 2015 to February 05, 2015
Date of Issue:	February 06, 2015
Test Result:	<b>Pass*</b>

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

  
Tony Wu  
E&E Section Manager  
SGS-CSTC (Shanghai) Co., Ltd.


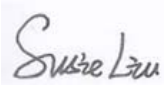
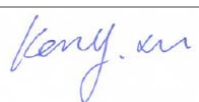
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The 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. All test results in this report can be traceable to National or International Standards.

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## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	February 06, 2015	/	Original

Authorized for issue by:				
Engineer		Eddy Zong		
		Print Name		
Clerk		Susie Liu		
		Print Name		
Reviewer		Keny Xu		
		Print Name		



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## 4 General Information

### 4.1 Client Information

Applicant: Hansong (Nanjing) Technology Ltd.  
 Address of Applicant: 8th Kangping Road, Jiangning Economy & Technology Development Zone, Nanjing, 211106, China.  
 Manufacturer: Dynaudio A/S  
 Address of Manufacturer: Sverigesvej 15, 8660 Skanderborg, DENMARK  
 Factory: Hansong (Nanjing) Technology Ltd.  
 Address of Factory: 8th Kangping Road, Jiangning Economy & Technology Development Zone, Nanjing, 211106, China.

### 4.2 General Description of E.U.T.

Product Description: Fixed product with BT and WiFi audio input function  
 Brand Name: Dynaudio  
 Input Voltage: DC 5V 2A via adapter  
 Adapter 1: Model No.: AS100-050-AD200  
 Rated Input: AC 100V-240V 50/60Hz 0.5A  
 Rated Output: DC 5.0V 2.0A  
 Cable length: AC port: 2 wires  
 DC port: 150 cm  
 Adapter 2: Model No.: FJ-SW1260502000DN  
 Rated Input: AC 100V-240V 50/60Hz 0.4A  
 Rated Output: DC 5.0V 2.0A  
 Cable length: AC port: 2 wires  
 DC port: 150 cm

### 4.3 Details of E.U.T.

Operation Frequency: BT: 2402MHz~2480MHz  
 DTS: 2412MHz-2462MHz (For HS-870-3Bxx);  
 2412-2464MHz, 5180-5240, 5736-5814MHz MHz (For HSDWAM83)  
 Bluetooth Version: 3.0+HS  
 Modulation Technique: BT: FHSS(GFSK,  $\pi/4$ DQPSK, 8DPSK)  
 DTS: 802.11b: DSSS(CCK, DQPSK, DBPSK)  
 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)  
 Number of Channel: BT: 79  
 DTS: 11(For HS-870-3Bxx); 9(For HSDWAM83)  
 Antenna Type: Integral PCB Antenna  
 (The two antennas of HS-870-3Bxx are not working simultaneously, the BT module and HS-870-3Bxx are not working simultaneously, the HSDWAM83 module are not working simultaneously at 2.4G and 5G band)  
 Antenna Gain: 2 dBi

#### **4.4 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

#### **4.5 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: 2017-07-14.

- **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: 2017-09-16.

- **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-1. Expiry Date: 2017-06-18.

- **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.

## 5 Test Standards and Limits

According to §1.1310 Radiofrequency radiation exposure limits:

The limit for general population/uncontrolled exposures

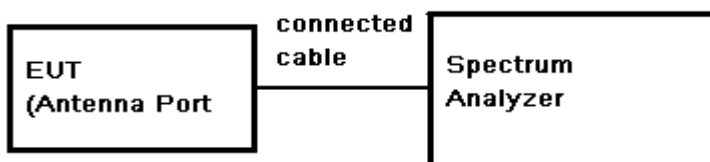
Frequency	Power density(mW/cm <sup>2</sup> )	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

## 6 Measurement and Calculation

### 6.1 Maximum transmit power

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

**Test Configuration:**



**Test Data:**

For BT:

Test mode	Channel	Reading Peak Power (dBm)	Cable Loss (dB)	Peak Power (dBm)	Peak Power (mW)	Peak Power Limit (dBm)	Result
GFSK	Low	0.29	0.5	0.79	1.20	30	PASS
	Mid	-0.16	0.5	0.34	1.08	30	PASS
	High	-0.14	0.5	0.36	1.09	30	PASS
π/4DQPSK	Low	-0.02	0.5	0.48	1.12	30	PASS
	Mid	0.27	0.5	0.77	1.19	30	PASS
	High	0.24	0.5	0.74	1.19	30	PASS
8DPSK	Low	0.20	0.5	0.70	1.17	30	PASS
	<b>Mid</b>	<b>0.40</b>	<b>0.5</b>	<b>0.90</b>	<b>1.23</b>	30	PASS
	High	0.32	0.5	0.82	1.21	30	PASS

For DTS (HS-870-3Bxx):

Antenna A

Test mode	Channel	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
802.11b	Low	17.79	0.5	18.29	67.45	30	PASS
	Mid	18.18	0.5	18.68	73.79	30	PASS
	High	<b>18.30</b>	<b>0.5</b>	<b>18.80</b>	<b>75.86</b>	30	PASS
802.11g	Low	16.83	0.5	17.33	54.08	30	PASS
	Mid	16.97	0.5	17.47	55.85	30	PASS
	High	17.01	0.5	17.51	56.36	30	PASS

Antenna B

Test mode	Channel	Reading Peak Power (dBm)	Cable Loss (dB)	Output Peak Power (dBm)	Output Peak Power (mW)	Peak Power Limit (dBm)	Result
802.11b	Low	18.54	0.5	19.04	80.17	30	PASS
	Mid	18.96	0.5	19.46	88.31	30	PASS
	High	<b>19.01</b>	<b>0.5</b>	<b>19.51</b>	<b>89.33</b>	30	PASS
802.11g	Low	18.02	0.5	18.52	71.12	30	PASS
	Mid	18.03	0.5	18.53	71.29	30	PASS
	High	17.97	0.5	18.47	70.31	30	PASS

For DTS (HSDWAM83):

The wireless modules has been applied full module approved with FCC ID: XCO-HSDWAM83 and IC: 7756A-HSDWAM83. The max transmit power is 0.089W for 2.4G band.

## 6.2 MPE Calculation

According to the formula  $S = \frac{PG}{4R^2\pi}$ , we can calculate S which is MPE.

Note:

- 1)  $P$  (Watts) = Power Input to antenna =  $10^{\frac{dBm}{10}} / 1000$
- 2)  $G$  (Antenna gain in numeric) =  $10^{\text{(Antenna gain in dBi / 10)}}$
- 3)  $R$  = distance to the center of radiation of antenna (in meter) = 20cm
- 4) MPE limit = 1mW/cm<sup>2</sup>

For BT:

The Max Conducted Peak Output Power is 1.23mW in middle channel of 8DPSK;

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{1.23 \times 1.58}{4 \times 400 \times 3.14} = 0.00039 \text{ mW/cm}^2$$

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For DTS (HS-870-3Bxx):

The Max Conducted Peak Output Power is 89.33mW in Highest channel of 802.11b;

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{89.33 \times 1.58}{4 \times 400 \times 3.14} = 0.02818 \text{ mW/cm}^2$$

For DTS (HSDWAM83):

The Max Conducted Peak Output Power is 89.00mW in 2.4G Band;

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{89.00 \times 1.58}{4 \times 400 \times 3.14} = 0.02799 \text{ mW/cm}^2$$

The Max Conducted Peak Output Power is 50.00mW in 5G Band;

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{50.00 \times 1.58}{4 \times 400 \times 3.14} = 0.01572 \text{ mW/cm}^2$$

The HSDWAM83 module can't simultaneous transmitting at 2.4G and 5G band.

The two antennas of HS-870-3Bxx module can't simultaneous transmitting.

The BT and the HS-870-3Bxx modules can't simultaneous transmitting at frequency 2.4GHz band.

The HS-870-3Bxx and the HSDWAM83 modules can simultaneous transmitting.

HSDWAM83 module transmitting at 2.4GHz band. The rate of MPE is  $\frac{0.02818}{1.0} + \frac{0.02799}{1.0} = 0.05617 \leq 1.0$ .

HSDWAM83 module transmitting at 5GHz band. The rate of MPE is  $\frac{0.02818}{1.0} + \frac{0.01572}{1.0} = 0.04390 \leq 1.0$ .

The BT and the HSDWAM83 modules can simultaneous transmitting.

HSDWAM83 module transmitting at 2.4GHz band. The rate of MPE is  $\frac{0.00039}{1.0} + \frac{0.02799}{1.0} = 0.02838 \leq 1.0$ .

HSDWAM83 module transmitting at 5GHz band. The rate of MPE is  $\frac{0.00039}{1.0} + \frac{0.01572}{1.0} = 0.01611 \leq 1.0$ .

According to the KDB447498 D01 section 7.2 determine the device is exclusion from SAR test.

## 7 EUT Constructional Details

Refer to the < Dynaudio Connect \_External Photos > & < Dynaudio Connect \_Internal Photos>.

**--End of the Report--**