

Equipment Under Test (EUT)

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RF Exposure Evaluation Report

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Application No.:	HKEM1806000372AV		
Applicant:	ENERGYBOX LIMITED		
Address of Manufacturer:	8F, Green 18, Hong Kong Science Park		
	Shatin, N.T., Hong Kong.		

Product Name:	Wireless Sensor		
Model No.:	EB/DOT-00/01		
FCC ID:	2AP8YEBDOT		
Standards:	47 CFR Part 1.1307 (2016)		
	47 CFR Part 1.1310 (2016)		
Date of Receipt:	2018-06-01		
Date of Test:	2018-06-06 to 2018-06-14		
Date of Issue:	2018-06-14		
Test Result :	PASS*		

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

Authorized Signature:

CHEN Jian-feng, Jeffrey

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. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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2 Version

Revision Record					
Version	Chapter	Date	Modifier	Remark	
01		2018-06-14		Original	

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4 General Information

4.1 General Description of EUT

Operating Frequency	903 MHz to 927 MHz
Type of Modulation:	GFSK
Number of Channels	121 Channels
Channel Separation:	200 kHz
Dwell time	Per channel is less than 0.4s.
Antenna Type	Integral
Antenna gain:	2.5 dBi
Speciality:	
Function:	Wireless sensor
Power Supply:	DC 3V (AA size x2 for DOT) or DC 5V
Adapter:	None
Power cord:	None

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4.2 Test Location

All tests were performed at:

SGS IECC Limited (Member of the SGS Group (SGS SA))

No. 16-B, Yip Wo Street, On Lok Tsuen, Fanling, N.T., Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.3 Test Facility

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

• HOKLAS (Lab Code: 125)

SGS IECC Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2005 an it has been accredited for performing specific test as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

• FCC Recognized Accredited Test Firm (CAB Registration No.: 446297)

SGS IECC Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0010, Test Firm Registration Number: 446297.

• Industry Canada (Site Registration No.: 5193A-2)

The 3m Alternative Semi-anechoic chamber of SGS IECC Limited has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 5193A-2. SGS IECC Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory.



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4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.

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5 **RF Exposure Evaluation**

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b) TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)	
(A) Lim	its for Occupationa	I/Controlled Exposu	res		
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f2) 1.0 f/300 5	6 6 6 6 6	
(B) Limits	for General Populati	on/Uncontrolled Exp	oosure		
0.3–1.34 1.34–30 30–300 300–1500 1500–100,000	614 824/f 27.5	1.63 2.19/f 0.073	*(100) *(180/f ²) 0.2 f/1500 1.0	30 30 30 30 30 30	

f= Frequency in MHz

Friis transmission formula: $Pd = (Pout^{*}G)/(4^{*} Pi^{*} R^{2})$ Where

 $Pd = power density in mW/cm^2$

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd the limit of MPE, f/1500 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

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5.1.3 EUT RF Exposure Evaluation

For 900MHz wireless sensor

Antenna 1 Gain: 3dBi,

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2 in linear scale. Output Power Into Antenna & RF Exposure Evaluation Distance:

Worst case result:

Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm2)	Limit	MPE Ratios	Result
903	13.08	40.65	0.0081	0.602	0.013	PASS

Note: Refer to test report <u>**HKEM180600037202**</u> for EUT EIRP value. The distancer (5th column) calculated from the Fries transmission formula is far greater than <u>**20 cm**</u> separation requirement.

So the SAR report is not reqired

- End of the Report -

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