RF Exposure Evaluation Declaration

Product Name	:	BlueNRG-A BLE Module
Model No.	:	LSD1BT-STBLEPCB
FCC ID	:	N8NLSD1BTSTBLEPCB

Applicant	:	Lierda Science & Technology Group Co.,Ltd
Address	:	Building 1#, Lierda IOT park, No.1326 Wenyi Xi Rd,HangZhou City,ZheJiang,China

Date of Receipt	:	Sep. 06, 2017
Test Date	:	Sep. 09, 2017~ Nov. 15, 2017
Issued Date	:	Jan. 08, 2018
Report No.	:	1792029R-RF-US- P20V01
Report Version	:	V 1.0

Test Report Certification

Issued Date : Jan. 08, 2018
Report No. : 1792029R-RF-US-P20V01

Product Name	:	BlueNRG-A BLE Module
Applicant	:	Lierda Science & Technology Group Co.,Ltd
Address	:	Building 1#, Lierda IOT park, No.1326 Wenyi Xi Rd,HangZhou City,ZheJiang,China
Manufacturer	:	Lierda Science & Technology Group Co.,Ltd
Address	:	Building 1#, Lierda IOT park, No.1326 Wenyi Xi Rd,HangZhou City,ZheJiang,China
Model No.	:	LSD1BT-STBLEPCB
FCC ID	:	N8NLSD1BTSTBLEPCB
EUT Voltage	:	DC 3.3V
Test Voltage	:	AC 120V/60Hz
Applicable Standard	:	KDB 447498D01V06 FCC Part1.1310
Test Result	:	Complied
Performed Location	:	DEKRA Testing & Certification (Suzhou) Co., Ltd. No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Designation Number: CN1199

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1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: 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 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4*pi*r2)

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 is the limit of MPE, 1 mW/cm^2 . 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.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.
The temperature and related humidity: 18℃and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	BlueNRG-A BLE Module
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- **Antenna Information:**

Antenna manufacturer	ACX					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☒	Multilayer Chip Antenna		
			☐	Stamping Antenna		
			☐	Metal plate type F antenna		
			☐	Monopole antenna		
Antenna Gain	0.5dBi					

- **Power Density:**

The maximum conducted tune-up power is 9dBm.

Test Mode	Frequency Band (MHz)	EIRP (dBm)	Limit of Power Density S(mW/cm^2)	Power Density at R = 20 cm (mW/cm^2)
BLE	2402 ~ 2480	9.44	1	0.017

Note:

1. The maximum power of related plane is calclated for simultaneous MPE.
2. The power density is 0.017mW/cm2 for BlueNRG-A BLE Module without any other radio equipment.

The End