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## MPE REPORT

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Report No: SRTC2019-9004(R)-19011803(I)

Product Name: nBlue Bluetooth® 5.0 Module

Product Model: BR-LE5.0-S1A

Applicant: BlueRadios, Inc.

Manufacturer: BlueRadios, Inc.

Specification: EN 62479: 2010

EN 50663: 2017

The State Radio\_monitoring\_center Testing Center (SRTC)

15th Building, No.30, Shixing Street, Shijingshan District,

Beijing, P.R.China

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## **1 GENERAL INFORMATION**

### **1.1 Notes of the test report**

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The test results relate only to individual items of the samples which have been tested.

### **1.2 Information about the testing laboratory**

Company:	The State Radio_monitoring_center Testing Center (SRTC)
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### **1.3 Applicant's details**

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Country or Region:	Englewood
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### **1.4 Manufacturer's details**

Company:	BlueRadios, Inc.
Address:	8310 S. Valley Highway, Suite 275
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Country or Region:	Englewood
Contacted person:	Mark Kramer
Tel:	303-957-1003
Fax:	303.845.7134
Email:	mkramer@blueradios.com

## 1.5 Test environment

Date of Receipt of test sample at SRTC:	2019-01-02
Testing Start Date:	2019-01-07
Testing End Date:	2019-02-20

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	30
Maximum Extreme	85	---
Minimum Extreme	-40	---

Normal Supply Voltage (V d.c.):	3.30
Maximum Extreme Supply Voltage (V d.c.):	1.70
Minimum Extreme Supply Voltage (V d.c.):	3.60

## **2 DESCRIPTION OF THE EQUIPMENT UNDER TEST**

### **2.1 Final equipment build status**

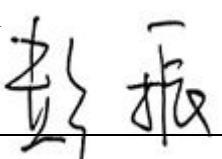


Frequency Range	2.402GHz~2.480GHz
Number of Channel	40
Modulation Type	GFSK
Duplex Mode	TDD
Channel Spacing	2MHz
Data Rate	2Mbps
Antenna Type	Fixed Internal Antenna
Antenna Gain	2.0dBi
Software Revision	OD
Hardware Revision	OD
SN	Sample 1#

## **3 REFERENCE SPECIFICATION**

Specification	Version	Title
EN 62479	2010	Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
EN 50663	2017	Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

## 4 RESULTS SUMMARY

No.	Test case	CE reference	Verdict
1	MPE Calculation	EN 62479: 2010 EN 50663: 2017	Pass

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: Mr. Tong Daocheng 	Issued date:  20190221

## **5 Maximum Permissible Exposure (MPE)**

### **5.1 Introduction**

The EUT RF radiation (Radiation Hazard). Although there is no scientific evidence of possible health risks to persons near to this EUT, some recommendations are giving below for the installation and operation of the EUT. Operators of EUT are required to obey the local regulation.

### **5.2 Limits and Guidelines on Exposure to Electromagnetic Fields**

There are a number of international and national regulations, standards and guidelines for exposure to electromagnetic fields. Several European countries have adapted there commendation of the council of the European Union published on 12. July 1999 on the limitation of exposure of the general public to electromagnetic fields (1999/519/EC), the commendation is based on the guideline published by the International Commission on Non-Ionizing Radiation protection (ICNIRP). Below table shows a comparison between different regulations and applied reference levels of some countries.

Exposure tier	Region of body	Limit
General Public	Head and truck	$P_{\max} \leq 20\text{mW}$
General Public	Limbs	$P_{\max} \leq 40\text{mW}$

Reference levels are provided for exposure assessment to determine whether the basic restrictions on exposure of humans to electromagnetic fields are exceeded. The basic restrictions on exposure to electromagnetic fields are based directly on established health effects and biological considerations.

### **5.3 Antenna**

There is the RF module with one antenna in EUT standard configuration, and the antenna is an integral antenna, which is the source of the radiation. EUT which was approved compliance with EN 62479:2010.

## **5.4 Calculation of Compliance Boundary**

Below method describes a theoretical approach to calculate the compliance boundary according to EN 62479:2010 based on a typical configuration of the EUT. Below method applies only to a site with the configurations described below. The method used for assessment is based on equations for far-field electromagnetic field calculation according to EN62479. Those equations are accurate in the far-field of antennas but will over-predict in the near field, however it can be used for “worst case” or conservative prediction of electromagnetic fields or power densities radiated by antenna. EUT’s antenna is integral antenna, so the estimation of compliance boundary is based on parameters of the antenna.

## **5.5 Typical Configuration**

### **Antennas Technical Description**

Conducted output power	7.5 dBm (max)
Antenna Gain	2.0 dBi
Transmitter frequency band	2400-2483.5MHz
Number of antenna	1
Antenna system and type	---



## **5.6 Calculation result**

Band	Maximum measured conducted power (dBm)	Antenna gain (dBi)	ERP power Pmax		Limits (mW)
			(dBm)	(mW)	
2400-2483.5MHz	8.5	2.00	9.5	8.91	20.0

The limit for Maximum Permissible Exposure for transmitter for head and trunk is 20 mW in table A.1 of EN 62479:2010 or EN 50663, and all the measured and calculated Pmax are below the limit 20 mW.

The above assessment compliance with EN 62479:2010 can be shown for any point of investigation outside the compliance boundary.

---End of Test Report---