

RF Exposure Evaluation declaration

Product Name : Bluetooth Module

Model No. : 319-BT82600

FCC ID : YKH319-BT82600

Applicant : NUMA Electronics Inc.

Address : 7F.-8, No.107, Sec. 1, Zhongshan Rd., Xinzhuang Dist., New Taipei City
242, Taiwan (R.O.C.)

Date of Receipt : Aug. 31, 2017

Date of Declaration : Sep. 15, 2017

Report No. : 1780554R-RFUSP01V00-A

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Issued Date: Sep. 15, 2017

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Applicant	NUMA Electronics Inc.
Address	7F.-8, No.107, Sec. 1, Zhongshan Rd., Xinzhuang Dist., New Taipei City 242, Taiwan (R.O.C.)
Manufacturer	NUMA Electronics Inc.
Model No.	319-BT82600
FCC ID.	YKH319-BT82600
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	AC 120V/60Hz
Trade Name	NUMA
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

Documented By

:



(Adm. Assistant / Peggy Tu)

Tested By

:



(Assistant Engineer / Jason Chang)

Approved By

:



(Director / Vincent Lin)

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/cm ²)	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: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 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.

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°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product : Bluetooth Module
Test Item : RF Exposure Evaluation
Test Site : No.3 OATS

Operation Frequency	2402-2480MHz
Maximum Conducted output power	7.04dBm
Antenna gain	3.03dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
5.05824662	0.0020

Power density is lower than the limit (1 mW/cm²).