RF Exposure Evaluation Report

Product	:	Casambi BLE Module
Trade mark	:	N/A
Model/Type reference	:	RFM-CSB-2, 3300-00063, 3300-00064, XEN-CSBM-1
Serial Number	:	N/A
Report Number	:	EED32I00227802
FCC ID	:	2AJML-EUCSBM
Date of Issue	:	Sep. 08, 2016
Test Standards	:	47 CFR Part 1.1307 (2015) 47 CFR Part 2.1093 (2015) KDB447498D01v06
Test result	:	PASS

Prepared for:

EULUM DESIGN, LLC
6131-B Kellers Church Road, Pipersville, PA 18947 USA

Prepared by:

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Date:	Sep. 08, 2016		Check No.: 2448766459

2 Version

Version No.	Date	Description
00	Sep. 08, 2016	Original

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4 General Information

4.1 Client Information

Applicant:	EULUM DESIGN, LLC
Address of Applicant:	6131-B Kellers Church Road, Pipersville, PA 18947 USA
Manufacturer:	EULUM DESIGN, LLC
Address of Manufacturer:	6131-B Kellers Church Road, Pipersville, PA 18947 USA
Factory:	EULUM DESIGN, LLC
Address of Factory:	6131-B Kellers Church Road, Pipersville, PA 18947 USA

4.2 General Description of EUT

Product Name:	Casambi BLE Module
Model No.(EUT):	RFM-CSB-2, 3300-00063, 3300-00064, XEN-CSBM-1
Trade Mark:	N/A
EUT Supports Radios application:	Bluetooth V4.0 BLE

4.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	4.0
Modulation Technique:	DSSS
Modulation Type:	GFSK
Number of Channel:	40
Test Power Grade:	N/A
Test Software of EUT:	N/A
Antenna Type:	Chip Antenna
Antenna Gain:	1.3dBi
Test Voltage:	DC 5V
Max Conducted Output Power:	-2.784dBm
Sample Received Date:	Aug. 17, 2016
Sample tested Date:	Aug. 17, 2016 to Sep. 08, 2016
The tested samples and the sample information are provided by the client. Model No.: RFM-CSB-2, 3300-00063, 3300-00064, XEN-CSBM-1 These models are similar identical on the circuit design, layout and transmission portion. The only difference in the power supply voltage. Therefore in this report the Model No. RFM-CSB-2 were fully tested, and the Model No.3300-00063, 3300-00064, XEN-CSBM-1 were retested for Radiated Emission and Conducted Peak Output Power.	

4.4 Test Location

All tests were performed at:

Centre Testing International (Shenzhen) Corporation

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

4.5 Test Facility

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

FCC-Registration No.: 886427

Centre Testing International (Shenzhen) Corporation. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International (Shenzhen) Corporation. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International (Shenzhen) Corporation., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions

None.

4.8 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation[17]

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

5.1.3 EUT RF Exposure

The Max Conducted Output Power is -2.784dBm in Middle channel(2.480GHz);

-2.784dBm logarithmic terms convert to numeric result is nearly 0.53mW

According to the formula. calculate the power test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = (0.53mW / 5 mm) x √2.480GHz = 0.17 ①

SAR requirement:

S= 3.0 ② ;

① < ②.

So the SAR report is not required.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32I00227801 for EUT external and internal photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.