

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

Vega User Guide



Nakra Labs

Nakra Labs Inc.
Version 0.1



23

Title	Vega User Guide
Doc. No.	
Revision No	0.1
Category	Service
Security	
Status	Preliminary
Total pages	
Project ID	
Project phase	
Written by	
Reviewed by	
Updated	22 September 2016

24

25 The information contained in this document is provided for informational
26 purposes only, and does not constitute any commitment or obligation on the part
27 of Nakra Labs with respect to any future products, services or undertakings. No
28 rights or licenses to any concepts or ideas contained in such information are
29 granted to the recipient of this document. Nakra Labs may at its sole discretion
30 pursue, not pursue or modify any of its intentions or activities described in this
31 document.

32

33 This document is proprietary and confidential

34 © Copyright 2016

35 All rights reserved

36

37	Table of Contents		
38	Vega	User Guide.....	1
39	Table of Contents.....		3
40	Change History		4
41	1	Introduction	5
42	2	Bluetooth	5
43	3	Bluetooth Low Energy RF	5
44	4	Operation Scenario	5
45	5	Monitoring	5
46	6	Sample picture	6
47			
48			

49 **Change History**

Version	Date	Owner	What was modified or added
0.1	22 Sep 2016	GY Yang	Initial pass

50

51

1 Introduction

This document describes circuit operation for the Vega device. The device is architected to perform multiple functions based on the use case it is deployed into. In the simplest deployment situation, the Vega can be used to track presence of an asset that it is attached to. In more involved cases, the device can be used to gather additional sensory information and transfer the information to a gateway or another device that is Bluetooth enabled that can decipher the data being transmitted.

2 Bluetooth

The device's primary wireless interface shall be Bluetooth Low Energy Ver. 4.2.

3 Bluetooth Low Energy RF

This device is applied Power Class 2.
Maximum output Power is under 2.5mW (4 dBm).

The Bluetooth system operates in the 2.4 GHz ISM band. This frequency band is 2400 - 2483.5 MHz.

Regulatory Range	RF Channels
2.400-2.4835 GHz	$f=2402+k$ MHz, $k=0,\dots,78$

4 Operation Scenario

Vega Tag will be delivered to user as activated. And operation is very simple. Vega will advertize the tag ID on 3 BLE(Bluetooth Low Energy) advertizing channel in two different frequencies.

- Motion: When Vega is in motion it will advertize at every 2 seconds
- Static: When Vega is Static it will advertize at every hour.

Vega has accelerometer to detect motion and small movement can be detected so that user knows the Vega is moving. In this way user can use Vega as a simple security purpose.

5 Monitoring

User can monitor the advertizing data with Mobile phone that supporting BLE 4.0 or later. Or user can put the advertized information to cloud via customized BLE

gateway and then monitor the data from PC or other devices anywhere in the world.

6 Sample picture



FCC compliance information

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.