

PRODUCT SPECIFICATION

1 X 2 WI-FI MODULE

Roku

WM01

Version 1.0

Liteon PN: AAZ200001G

This document contains confidential proprietary information and is property of LTC. The contents of this document should not be disclosed to unauthorized persons without the written consent of LTC.

Change History:

Revision	Date	Author	Change List
Version 1.0	2014/01/27	Kaysa Lee	Preliminary

Author: Kaysa Lee	Approved by: Sunny Hsieh
Editor: Kaysa Lee	Project Leader: Sunny Hsieh

CONTENT

PRODUCT FEATURES	3
PRODUCT SPECIFICATIONS.....	3
MAIN CHIPSET	3
FUNCTIONAL SPECIFICATIONS	3
MECHANICAL	4
PRODUCT PICTURE	4
PIN DEFINITION	5
BLOCK DIAGRAM.....	5
EEPROM INFORMATION	5
ENVIRONMENTAL	5

PRODUCT FEATURES

- Operate at 2.4GHz band
- 150Mbps PHY Rate Support
- 1T1R Modes
- USB 2.0 support for data rates up to 12Mbps full speed and 480Mbps high speed
- IEEE standards support: IEEE 802.11b/g and 802.11n
- 802.11i- WEP 64/128, AES, TKIP
- Support Wi-Fi Direct
- RoHS compliance
- Low Halogen compliance

Product specifications

Main chipset

MAC/Baseband/RF: Broadcom BCM43143

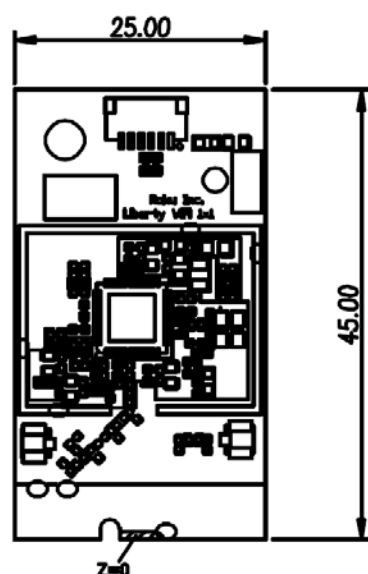
Functional Specifications

Standard	IEEE802.11b; IEEE 802.11g; IEEE802.11n		
Bus Interface	Universal Serial Bus (USB2.0)		
Data Rate	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: MCS 0 to 7 for HT20MHz		
Media Access Control	CSMA/CA with ACK		
Radio Technology	802.11b: CCK, DQPSK, DBPSK 802.11g: 64QAM, 16 QAM, QPSK, BPSK 802.11n: BPSK, QPSK, 16QAM, 64QAM		
Network architecture	Infrastructure mode Wi-Fi Direct Miracast		
Operating Channel	2.4-2.483 GHz:IEEE Channels 1-11 (USA)		
Transmit Output Power (Tolerance: +1.5dBm/-1.5dBm)	802.11b 17.5dBm	802.11g 15.5dBm@54Mbps	802.11n 15dBm
Receiver Sensitivity	802.11b: Less than -76dBm 802.11g: Less than -82dBm @ 6Mbps Less than -65dBm @54Mbps 802.11n: Less than -82dBm @ MCS0 Less than -64dBm @ MCS7		

Security	64-bit, 128-bit WEP, TKIP, AES, WPA, WPA2, WPS IEEE 802.11i
Operating Voltage	3.3V $\pm$ 9% I/O supply voltage
Power Consumption	299.62mA/381.89mA(Mean/Max) 988.746mW/1260.237mW(3.3V)
Antenna Type	Antenna 1: On-board metal PIFA-type antenna Antenna 2: Stand-alone metal PIFA with soldered mini-coaxial cable using male U.FL. connector

*Environmental factors dependent

Mechanical



1. THICKNESS OF PCB: 1.00 $\pm$ 0.10mm
2. TOLERANCE: $\pm$ 0.10mm; OUTLINE TOLERANCE: $\pm$ 0.10mm

Product Picture

Top



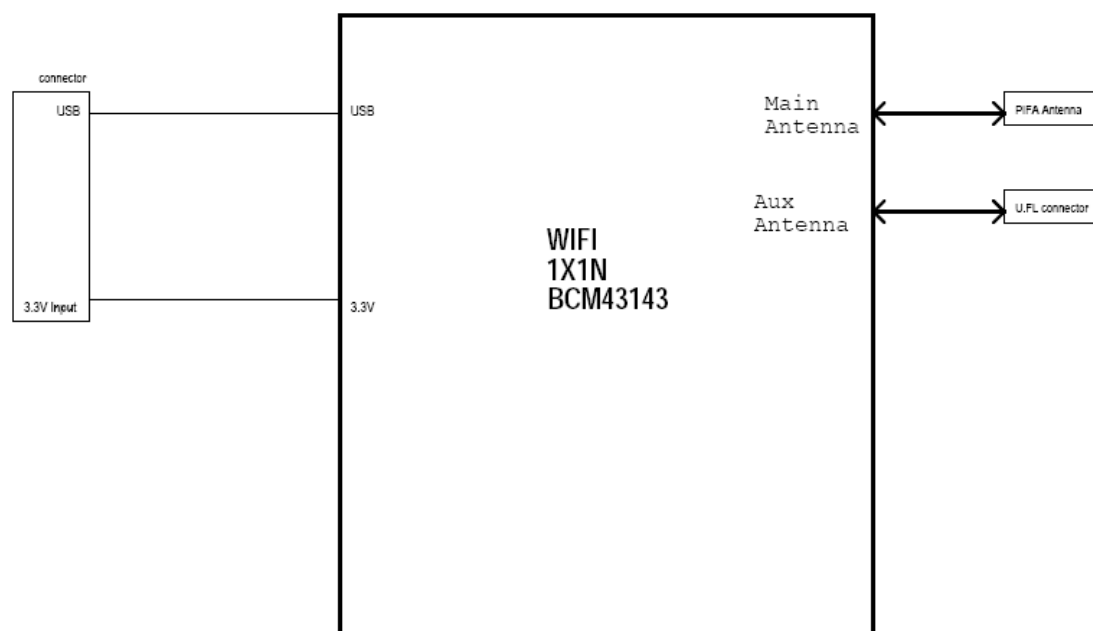
Bottom



Pin definition

Pin Number	Pin Name
1	VCC(3V3)
2	D-
3	D+
4	GND
5	NC
6	RESETn

Block Diagram



EEPROM INFORMATION

Vendor ID	0x0A5C
Product ID	0xBD1E

ENVIRONMENTAL

Operating

Operating Temperature: 0 to 40C
Relative Humidity: 5-90% (non-condensing)

Storage

Temperature: -40 to 80C
Relevant Humidity: 5-80% (non-condensing)

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.

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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

FCC RF Radiation Exposure Statement: 1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. 2.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Information to OEM integrator

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user manual of the end product. The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.

1. To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product transmitter product procedures.

2. Only those antennas with same type and lesser gain filed under this FCC ID number can be used with this device.
3. The regulatory label on the final system must include the statement: "Contains FCC ID: xxxx".
4. The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system.
5. The EUT needs an external host regulated power supply regulation, and therefore the device is limited to installation by Roku, Inc. or OEM integrators in devices that provide the necessary regulated power supply to the module.

IC Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Industry Canada - Class B This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

L'opération est soumise aux deux conditions suivantes: (1) cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer fonctionnement du dispositif.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

Afin de réduire les interférences radio potentielles pour les autres utilisateurs, le type d'antenne et son gain doivent être choisis de telle sorte que la puissance isotrope rayonnée équivalente (PIRE) est pas plus que celle permise pour une communication réussie.

RF exposure warning: The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Avertissement d'exposition RF: L'équipement est conforme aux limites d'exposition aux RF établies pour un environnement non contrôlé. L'antenne (s) utilisée pour ce transmetteur ne doit pas être co-localisée ou fonctionner en conjonction avec toute autre antenne ou transmetteur.

Avertissement d'exposition RF:

1. Cet émetteur ne doit pas être coimplanté ou fonctionner en même temps qu'aucune autre antenne ou émetteur.
2. Cet équipement est conforme aux limites d'exposition de rayonnement de la FCC rf déterminées pour un environnement non contrôlé. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

CAN ICES-3 (B)/NMB-3(B)