



FCC Part 15.247

RSS-247 Issue 2, Feb 2017; RSS-Gen Issue 5, Mar 2019

TEST REPORT

For

Silicon Labs

9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur,
Hyderabad, Telangana, India - 500 081

Report Type:	Original Report
Brand Name:	Silicon Labs
FCC Identity:	FCC ID: XF6-B001P5V2P1
IC Identity:	IC: 8407A-B001P5V2P1
Product Name:	WiFi bgn, BT5.0 SIP Module
Model Name:	RS9116-B00
Report Number:	RLK201108001-00C
Report Date:	2021/02/01
Reviewed By:	Flight Hsieh <i>Flight Hsieh</i>
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Note: This test report is prepared for the customer shown above and for the device described herein.
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Laboratories Corp. (Linkou Laboratory)

Revision History

Revision	Report Number	Issue Date	Description
1.0	RLK201108001-00C	2021/02/01	Original Report

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	Silicon Labs 9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur, Hyderabad, Telangana, India - 500 081
Manufacturer	Silicon Labs 9th Floor, Maximus Towers 2B, Raheja Mindspace IT Park, APIIC Software Layout, Madhapur, Hyderabad, Telangana, India - 500 081
Brand Name	Silicon Labs
Product (Equipment)	WiFi bgn, BT5.0 SIP Module
Model Name	RS9116-B00
Frequency Range	IEEE 802.11b/g/n HT20: 2412 - 2462 MHz IEEE 802.11n HT40: 2422 - 2452 MHz
Number of Channels	IEEE 802.11b/g/n HT20: 11 Channels IEEE 802.11n HT40: 9 Channels
Output Power	Chip Antenna (FR05-S1-N-0-102) with 1.8Vdc IEEE 802.11b: 16.48 dBm (0.0445 W) IEEE 802.11g: 16.88 dBm (0.0488 W) IEEE 802.11n HT20: 16.91 dBm (0.0491 W) IEEE 802.11n HT40: 10.97 dBm (0.0125 W) Chip Antenna (FR05-S1-N-0-102) with 3.3Vdc IEEE 802.11b: 18.56 dBm (0.0718 W) IEEE 802.11g: 21.75 dBm (0.1496 W) IEEE 802.11n HT20: 21.93 dBm (0.1560 W) IEEE 802.11n HT40: 15.18 dBm (0.0330 W) Dipole Antenna (GW.34.5153) with 1.8Vdc IEEE 802.11b: 16.85 dBm (0.0484 W) IEEE 802.11g: 17.74 dBm (0.0594 W) IEEE 802.11n HT20: 17.79 dBm (0.0601 W) IEEE 802.11n HT40: 13.93 dBm (0.0247 W) Dipole Antenna (GW.34.5153) with 3.3Vdc IEEE 802.11b: 18.56 dBm (0.0718 W) IEEE 802.11g: 21.75 dBm (0.1496 W) IEEE 802.11n HT20: 22.98 dBm (0.1986 W) IEEE 802.11n HT40: 18.42 dBm (0.0695 W)
Modulation Type	IEEE 802.11b: DSSS; IEEE 802.11g/n HT 20/HT40: OFDM
Power Operation (Voltage Range)	☒ DC Type ☒ From Host System: 1.8Vdc/3.3Vdc
Related Submittal(s)/Grant(s)	FCC Part 15.247 DSS with FCC ID: XF6-B001P5V2P1 FCC Part 15.247 DTS with FCC ID: XF6-B001P5V2P1
Received Date	2020/11/10
Date of Test	2020/11/10 - 2020/11/28

Note: All measurement and test data in this report was gathered from production sample serial number: 201108002. Assigned by Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

1.2 Objective and Test Methodology

The Objective of this Test Report was to document the compliance of the Silicon Labs. Appliance (Model: RS9116-B00) to the requirements of the following Standards:

- Part 2, Subpart J, Part 15, Subparts A and C, section 15.247 of the Federal Communication Commission's rules.
- ANSI C63.10-2013 of the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- RSS-Gen Issue 5, Mar 2019— General Requirements for Compliance of Radio Apparatus
- RSS-247 Issue 2, Feb 2017— Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.3 Measurement Uncertainty

Parameter	Expanded Measurement uncertainty
RF output power with Power Meter	± 1.488 dB
Occupied Channel Bandwidth	± 453.927 Hz
RF Conducted test with Spectrum	± 2.77 dB
AC Power Line Conducted Emission	± 2.66 dB
Radiated Below 1G	± 3.57 dB
Radiated Above 1G	± 5.32 dB

The test results with statement of conformity, the decision rules are based on the specifications and standards. The test results will not take the measurement uncertainty into account.

1.4 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou Laboratory) to collect test data is located on

☒ No.6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

Bay Area Compliance Laboratories Corp. (Linkou Laboratory) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) by Mutual Recognition Agreement (MRA). The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database. The FCC Registration No.: 0027578244. Designation No.: TW3546. The Test Firm Registration No.: 181430.

2 System Test Configuration

2.1 Test Channels and Description of Worst Test Configuration

The system was configured for testing in testing mode which was provided by manufacturer. No special accessory, No modification was made to the EUT and No special equipment used during test.

For Wi-Fi 2.4G mode, there are totally 11 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	-	-

For 802.11b/g/n HT20: Channel 1, 6 and 11 were tested. For 802.11n HT40: Channel 3, 6 and 9 were tested.

-For Radiated Emission, Conducted Power, Conducted Band Edge and PSD had test for two antenna and two voltage that because the power setting is different, the result will be different. For Bandwidth, Conducted Emission only test one result that because the power not affect the result.

Modulation Used for Conformance Test			
Configuration	N _{TX}	Data Rate	Worst Data Rate
802.11b	1	1-11 Mbps	1 Mbps
802.11g	1	6-54 Mbps	6 Mbps
802.11n HT 20	1	MCS 0-7	MCS 0
802.11n HT 40	1	MCS 0-7	MCS 0

Worst Case of Power Setting				
EUT Exercise Software		PER Test App		
Configuration	N _{TX}	Low CH	Mid CH	High CH
<Chip Antenna (FR05-S1-N-0-102) with 1.8V _{dc} >				
802.11b	1	12	22	13
802.11g	1	8	15	10
802.11n HT 20	1	7	15	9
802.11n HT 40	1	5	9	8
<Chip Antenna (FR05-S1-N-0-102) with 3.3V _{dc} >				
802.11b	1	17	22	16
802.11g	1	12	20	14
802.11n HT 20	1	10	19	13
802.11n HT 40	1	8	12	12

Worst Case of Power Setting				
EUT Exercise Software		PER Test App		
Configuration	N _{TX}	Low CH	Mid CH	High CH
< Dipole Antenna (GW.34.5153) with 1.8Vdc>				
802.11b	1	13	22	12
802.11g	1	9	15	10
802.11n HT 20	1	7	15	9
802.11n HT 40	1	5	9	8
< Dipole Antenna (GW.34.5153) with 3.3Vdc>				
802.11b	1	17	22	16
802.11g	1	12	20	13
802.11n HT 20	1	12	20	13
802.11n HT 40	1	9	13	12

2.2 Support Equipment List and External Cable List

No.	Description	Manufacturer	Model Number	Serial Number
A	NoteBook	DELL	Latitude E6410	PP27LA001

No.	Description	Manufacturer	Model Number
1	USB Cable	Tensility International Corp	10-02331

2.3 Block Diagram of Test Setup

