TEST REPORT

Applicant:	Realtek Semiconductor Corp.
Address:	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan
Equipment Type:	11ax RTL8852BE Combo module
Model Name:	RTL8852BE
Brand Name:	N/A
FCC ID:	TX2-RTL8852BE
Test Standard:	KDB 388624 D02 v18
Sample Arrival Date:	Nov. 06, 2023
Test Date:	Dec. 09, 2023 - Dec. 13, 2023
Date of Issue:	Dec. 27, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xiong Lining **Checked by:** Xu Rui **Approved by:** Tolan Tu

(Testing Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	Dec. 27, 2023	Initial Issue

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

1.3 Test Environment Condition

Ambient Temperature	18℃ to 25℃
Ambient Relative Humidity	30% to 70%

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.2 Manufacturer Information

Manufacturer	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.3 General Description for Equipment under Test (EUT)

EUT Name	11ax RTL8852BE Combo module
Model Name Under Test	RTL8852BE
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.3.1 Host Information:

Product Name	Notebook Computer
Model Name	IdeaPad 5 2-in-1 16AHP9
Brand Name	Lenovo

2.3.2 Antenna Information:

Antenna Port	Model Name	Antenna Manufacturer	Antenna Type	Antenna Gain (dBi)				
				2.4 GHz	5.15 - 5.25 GHz	5.25 - 5.35 GHz	5.47 - 5.725 GHz	5.725 - 5.895 GHz
Main Antenna	AYP6Y-100469	AWAN	PIFA	2.26	3.16	3.08	2.43	3.22
Auxiliary Antenna	AYP6Y-100470		PIFA	2.16	3.41	3.33	2.89	3.82
Main Antenna	3.N201.0263	South Star	PIFA	1.79	2.31	1.52	2.73	2.61
Auxiliary Antenna	3.N201.0264		PIFA	1.69	1.87	2.28	2.82	3.18

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40), VHT20/40 and 802.11ax(HE20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) and 802.11ax(HE20/40/80), U-NII-1/2A/2C/3

The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	2.4G WLAN; 5G WLAN; Bluetooth	
Frequency Range	802.11b/g	2412 MHz ~ 2472 MHz
	VHT20/VHT40	2412 MHz ~ 2472 MHz
	802.11ax(HE20/HE40)	2412 MHz ~ 2472 MHz
	802.11a	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
	802.11 n(HT20/HT40)	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
	802.11 ac(VHT20/VHT40/VHT80)	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
	802.11 ax(HE20/HE40/HE80)	5150 MHz ~ 5250 MHz
		5250 MHz ~ 5350 MHz
		5470 MHz ~ 5725 MHz
		5725 MHz ~ 5850 MHz
	Bluetooth	2402 MHz ~ 2480 MHz
Antenna Type	WLAN: PIFA Antenna Bluetooth: PIFA Antenna	
Hotspot Function	N/A	
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Portable Device	
EUT Type	☒ Production unit	☐ Identical prototype

2.6 Remarks and Comments

The test report is validation of the G sensor functionality

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	KDB 388624 D02 v18	Pre-Approval Guidance List v18, PRE-APPROVAL GUIDANCE LIST

3.2 Test Results Summary

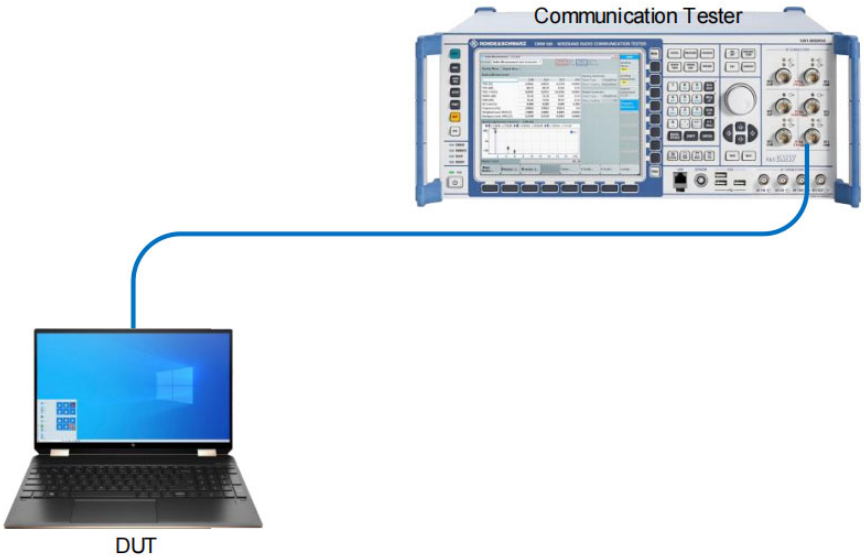
Device Mode	Lid Angle range	WLAN 2.4GHz(802.11b Channel 6)				WLAN 5GHz(802.11ac80 Channel 155)			
		Tune-up Power (dBm)		Measured Power(dBm)		Tune-up Power (dBm)		Measured Power(dBm)	
		Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna
Laptop	0° - 350°	16.50	16.50	16.40	16.40	16.00	16.00	15.90	15.90
Tablet	350° - 360°	12.00	12.00	11.83	11.88	10.50	10.50	10.40	10.33

4 MEASUREMENT SYSTEM

4.1 Conducted Power Test Setup

The conducted power measurement test setup is described in the following and illustrated in below figure.

1. The DUT is convertible PC from Lenovo model IdeaPad 5 2-in-1 16AHP9 RTL8852BE connectivity module is installed.
2. A control PC is used to configure the call box as an access point to manage the uplink and downlink data traffic.
3. Uplink signal power is measured with the Call Box.
4. Path loss in the power measurement setup from the wireless module antenna port to the Call Box.



4.2 G-Sensor Conducted Power Test Procedure

The following additional guidance applies only to convertible laptops whose screen rotates around one axis, from 0 degrees to 360 degrees, in a clamshell style, i.e., from closed mode to open mode, to “tent” mode, and finally, to tablet mode. This process must be followed to determine the lid angle where a power reduction occurs, by taking power measurements at each step, as indicated in the step listed here below:

1. From the lid in closed mode (0 degrees), open the screen in 10-degree steps until laptop mode is obtained.
2. Lower the screen by 5 degrees increments to verify that the “closed mode” is triggered.
3. From the position of the previous step, open the screen in 1-degree increments until laptop mode is triggered again.
4. Continue opening the screen in 1-degree increments until at least 5 degrees past where “laptop mode” was obtained, then continue opening the screen in 10-degree steps until the device switches to tablet mode.
5. Reverse the previous procedure to go from tablet mode back down to closed mode.

5 TEST EQUIPMENTS LIST

Description	Manufacturer	Model	Serial No./Version	Cal. Date	Cal. Due
PC	Dell	N/A	N/A	N/A	N/A
Communication Tester	Rohde &Schwartz	CMW500	171150	2023/6/19	2024/6/18
RF Cable	N/A	N/A	N/A	N/A	N/A
Note: RF cable loss was verified before usage.					

ANNEX A CONDUCTED POWER TEST RESULT

A.1 Trigger lid angle detection and power verification 2.4GHz

A.1.1 The lid is rotating from 0° to 360°

Mode	Angele (degrees)	Measured Power 2.4GHz 802.11b Ch6 (dBm)	
		Main	Aux.
Laptop	0	16.05	16.16
	10	16.27	16.20
	20	16.09	16.25
	30	16.08	16.38
	40	16.16	16.12
	50	16.12	16.11
	60	16.26	16.15
	70	16.23	16.18
	80	16.34	16.24
	90	16.22	16.08
	100	16.20	16.29
	110	16.20	16.11
	120	16.23	16.20
	130	16.38	16.15
	140	16.25	16.31
	150	16.23	16.40
	160	16.19	16.32
	170	16.16	16.40
	180	16.22	16.35
	190	16.27	16.31
	200	16.36	16.15
	210	16.15	16.15
	220	16.11	16.26
	230	16.23	16.31
	240	16.08	16.10
	250	16.27	16.05
	260	16.35	16.29
	270	16.12	16.10
	280	16.36	16.17
	290	16.06	16.23
	300	16.28	16.16
	310	16.09	16.34
	320	16.29	16.23

	330	16.28	16.14
	340	16.10	16.11
Tablet	350	11.55	11.65
Laptop	345	16.08	16.24
	346	16.24	16.15
	347	16.24	16.32
	348	16.15	16.12
	349	16.09	16.35
Tablet	350	11.83	11.87
	351	11.60	11.87
	352	11.61	11.82
	353	11.68	11.88
	354	11.56	11.79
	355	11.74	11.85
	360	11.80	11.77

A.1.2 The lid is rotating from 360° to 0°

Mode	Angele (degrees)	Measured Power 2.4GHz 802.11b Ch6 (dBm)	
		Main	Aux.
Tablet	360	11.65	11.73
	350	11.74	11.67
Laptop	340	16.12	16.22
	345	16.13	16.11
Tablet	350	11.69	11.69
Laptop	349	16.10	16.14
	348	16.10	16.17
	347	16.39	16.25
	346	16.29	16.11
	345	16.12	16.13
	340	16.07	16.23
	330	16.26	16.05
	320	16.07	16.07
	310	16.37	16.33
	300	16.40	16.37
	290	16.28	16.36
	280	16.12	16.06
	270	16.22	16.33
	260	16.30	16.18
	250	16.28	16.28
	240	16.10	16.16
	230	16.17	16.35
	220	16.35	16.26
	210	16.18	16.36
	200	16.29	16.34
	190	16.06	16.37
	180	16.24	16.26
	170	16.31	16.17
	160	16.33	16.21
	150	16.39	16.36
	140	16.18	16.10
	130	16.19	16.21
	120	16.09	16.29
	110	16.25	16.10
	100	16.34	16.10
	90	16.33	16.33
	80	16.12	16.32

	70	16.14	16.11
	60	16.37	16.11
	50	16.29	16.21
	40	16.07	16.09
	30	16.18	16.37
	20	16.37	16.33
	10	16.19	16.20
	0	16.26	16.36

A.2 Trigger lid angle detection and power verification 5GHz

A.2.1 The lid is rotating from 0° to 360°

Mode	Angele (degrees)	Measured Power	
		5GHz 802.11ac80 Ch155	
		(dBm)	
		Main	Aux.
Laptop	0	15.76	15.73
	10	15.76	15.66
	20	15.78	15.61
	30	15.75	15.63
	40	15.88	15.85
	50	15.59	15.65
	60	15.65	15.78
	70	15.55	15.57
	80	15.65	15.62
	90	15.63	15.75
	100	15.77	15.66
	110	15.78	15.90
	120	15.85	15.80
	130	15.90	15.61
	140	15.62	15.56
	150	15.82	15.67
	160	15.86	15.63
	170	15.85	15.66
	180	15.73	15.79
	190	15.57	15.79
	200	15.76	15.62
	210	15.56	15.75
	220	15.57	15.72
	230	15.55	15.68
	240	15.59	15.85
	250	15.85	15.80
	260	15.82	15.58
	270	15.77	15.62
	280	15.78	15.60
	290	15.69	15.88
	300	15.71	15.66
	310	15.66	15.87
	320	15.76	15.75
	330	15.65	15.73
	340	15.84	15.67

Tablet	350	10.35	10.33
Laptop	345	15.64	15.64
	346	15.87	15.76
	347	15.57	15.80
	348	15.89	15.56
	349	15.82	15.67
Tablet	350	10.12	10.14
	351	10.10	10.32
	352	10.40	10.07
	353	10.28	10.06
	354	10.21	10.18
	355	10.23	10.20
	360	10.33	10.08

A.2.2 The lid is rotating from 360° to 0°

Mode	Angele (degrees)	Measured Power	
		5GHz 802.11ac80 Ch155	
		(dBm)	
		Main	Aux.
Tablet	360	10.31	10.26
	350	10.37	10.24
Laptop	340	15.89	15.65
	345	15.57	15.73
Tablet	350	10.27	10.12
Laptop	349	15.78	15.58
	348	15.78	15.70
	347	15.69	15.69
	346	15.74	15.83
	345	15.68	15.80
	340	15.62	15.63
	330	15.82	15.72
	320	15.85	15.69
	310	15.73	15.75
	300	15.67	15.71
	290	15.63	15.85
	280	15.73	15.84
	270	15.62	15.82
	260	15.73	15.87
	250	15.66	15.76
	240	15.79	15.56
	230	15.61	15.59
	220	15.66	15.63
	210	15.87	15.87
	200	15.64	15.60
	190	15.85	15.63
	180	15.81	15.66
	170	15.59	15.57
	160	15.62	15.86
	150	15.82	15.87
	140	15.65	15.60
	130	15.67	15.82
	120	15.76	15.87
	110	15.57	15.71
	100	15.80	15.65
	90	15.85	15.76
	80	15.65	15.88

	70	15.73	15.76
	60	15.58	15.66
	50	15.83	15.63
	40	15.62	15.78
	30	15.81	15.60
	20	15.82	15.90
	10	15.61	15.85
	0	15.64	15.85

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the “inspection and testing dedicated stamp” or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--