TEST REPORT

Applicant:	Realtek Semiconductor Corp.
Address:	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan
Equipment Type:	11be RTL8922AE Combo module
Model Name:	RTL8922AE
Brand Name:	N/A
FCC ID:	TX2-RTL8922AE
ISED Number:	6317A-RTL8922AE
Test Standard:	KDB 388624 D02 v18 RSS-102 Issue 6
Sample Arrival Date:	Nov. 27, 2024
Test Date:	Dec. 19, 2024
Date of Issue:	Jan. 16, 2025

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 Content
Rev. 01	Jan. 16, 2025	Initial Issue

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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. The laboratory is a testing organization accredited by ISED as a accredited testing laboratory. The company number is 11524A and CAB identifier number is CN0030.

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	11be RTL8922AE Combo module
Model Name Under Test	RTL8922AE
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 16AKP10
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	5.925-6.425 GHz	6.425 - 6.525 GHz	6.525 - 6.875 GHz	6.875 - 7.125 GHz
Main Antenna	AYP6Y-100469	AWAN	PIFA	2.26	3.16	3.08	2.43	3.22	2.85	3.88	3.14	2.25
Auxiliary Antenna	AYP6Y-100470		PIFA	2.16	3.41	3.33	2.89	3.82	3.38	3.40	3.40	3.53
Main Antenna	3.N201.0263	South Star	PIFA	1.79	2.31	1.52	2.73	2.61	2.83	2.29	1.82	1.77
Auxiliary Antenna	3.N201.0264		PIFA	1.69	1.87	2.28	2.82	3.18	2.86	3.18	2.21	2.97

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n, VHT, 802.11ac, 802.11ax and 802.11be

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

Operating Mode	2.4G WLAN; 5G WLAN; 6G WLAN; Bluetooth	
Frequency Range	802.11b/g	2412 ~ 2472 MHz
	VHT20/VHT40	2412 ~ 2472 MHz
	802.11ax(HE20/HE40)	2412 ~ 2472 MHz
	802.11be(EHT20/EHT40)	2412 ~ 2472 MHz
	802.11a	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
		5815 ~ 5885 MHz
	802.11n(HT20/HT40)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
		5815 ~ 5885 MHz
	802.11ac(VHT20/VHT40/VHT80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
		5815 ~ 5885 MHz
	802.11ax(HE20/HE40/HE80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
		5815 ~ 5885 MHz
	802.11be(EHT20/EHT40/EHT80)	5150 ~ 5250 MHz
		5250 ~ 5350 MHz
		5470 ~ 5725 MHz
		5725 ~ 5850 MHz
		5815 ~ 5885 MHz
	802.11ac(VHT160)/ 802.11ax(HE160)/ 802.11be(EHT160)	5150 ~ 5250 MHz
		5470 ~ 5725 MHz
		5815 ~ 5885 MHz
	802.11a/	5925 ~ 6425 MHz

	802.11ax(HE20/HE40/HE80/ HE160) 802.11be(EHT20/EHT40/EHT80/ EHT160)	6425 ~ 6525 MHz
		6525 ~ 6875 MHz
		6875 ~ 7125 MHz
	Bluetooth	2402 ~ 2480 MHz
Antenna Type	WLAN	PIFA
	Bluetooth	PIFA
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
2	RSS-102 Issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

3.2 Test Results Summary

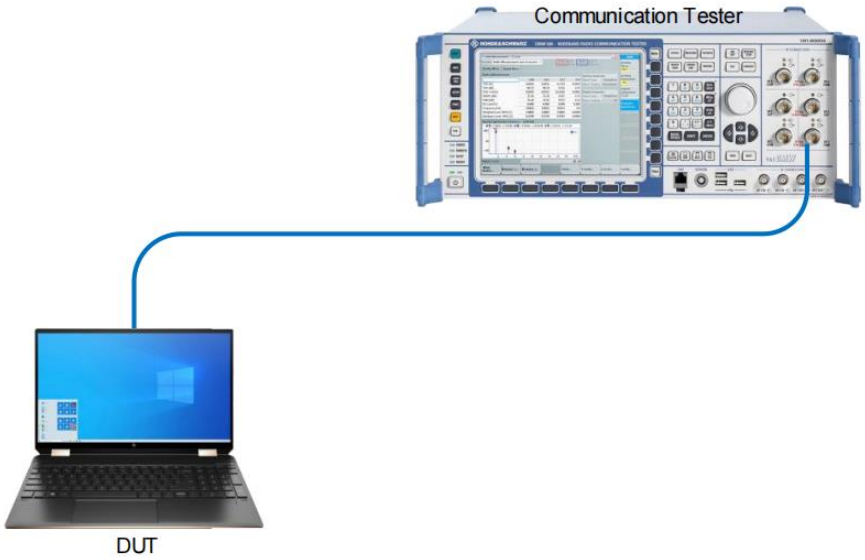
Device Mode	Lid Angle range	WLAN 2.4GHz (802.11b Channel 6)				WLAN 5GHz (802.11a Channel 120)			
		Tune-up Power (dBm)		Measured Power (dBm)		Tune-up Power (dBm)		Measured Power (dBm)	
		Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna	Main. Antenna	Aux. Antenna
Laptop	0° - 180°	15.50	16.00	15.39	15.90	16.00	16.00	15.87	15.90
Tablet	181° - 360°	12.00	12.00	11.90	11.90	11.00	10.00	10.88	9.90

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 . The 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	167190	2024/5/8	2025/5/7
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	15.21	15.82
	10	15.27	15.55
	20	15.10	15.59
	30	15.25	15.65
	40	15.18	15.74
	50	15.39	15.87
	60	15.28	15.89
	70	15.32	15.84
	80	15.05	15.55
	90	15.14	15.70
	100	15.10	15.64
	110	15.09	15.84
	120	15.13	15.74
	130	15.20	15.62
	140	15.24	15.81
	150	15.16	15.57
	160	15.26	15.86
	170	15.14	15.80
	180	15.35	15.71
Tablet	190	11.68	11.83
	185	11.80	11.56
Laptop	180	15.37	15.84
Tablet	181	11.72	11.83
	182	11.59	11.77
	183	11.82	11.58
	184	11.89	11.74
	185	11.61	11.81
	190	11.86	11.69

	200	11.81	11.60
	210	11.83	11.79
	220	11.70	11.55
	230	11.64	11.62
	240	11.75	11.79
	250	11.78	11.55
	260	11.66	11.71
	270	11.80	11.58
	280	11.61	11.71
	290	11.62	11.90
	300	11.55	11.71
	310	11.83	11.60
	320	11.86	11.74
	330	11.88	11.64
	340	11.64	11.61
	350	11.71	11.80
	360	11.88	11.65

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	11.89	11.65
	350	11.55	11.80
	340	11.84	11.77
	330	11.78	11.77
	320	11.64	11.59
	310	11.84	11.74
	300	11.70	11.72
	290	11.79	11.85
	280	11.67	11.81
	270	11.70	11.57
	260	11.60	11.69
	250	11.71	11.90
	240	11.72	11.84
	230	11.66	11.90
	220	11.60	11.84
	210	11.66	11.75
	200	11.57	11.69
	190	11.71	11.72
Laptop	180	15.25	15.84
Tablet	185	11.61	11.64
	184	11.83	11.79
	183	11.90	11.74
	182	11.66	11.81
	181	11.77	11.67
Laptop	180	15.36	15.58
	179	15.16	15.85
	178	15.14	15.67
	177	15.31	15.75
	176	15.25	15.60
	175	15.18	15.83
	170	15.05	15.65
	160	15.21	15.80
	150	15.11	15.86

	140	15.11	15.77
	130	15.14	15.77
	120	15.36	15.81
	110	15.11	15.81
	100	15.36	15.90
	90	15.05	15.81
	80	15.30	15.58
	70	15.13	15.81
	60	15.14	15.81
	50	15.34	15.84
	40	15.09	15.71
	30	15.05	15.58
	20	15.31	15.75
	10	15.30	15.86
	0	15.08	15.82

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 802.11a Ch120	
		(dBm)	
		Main	Aux.
Laptop	0	15.56	15.82
	10	15.73	15.57
	20	15.78	15.79
	30	15.82	15.90
	40	15.64	15.88
	50	15.66	15.83
	60	15.72	15.69
	70	15.75	15.75
	80	15.55	15.61
	90	15.56	15.71
	100	15.62	15.85
	110	15.62	15.81
	120	15.60	15.66
	130	15.83	15.82
	140	15.83	15.67
	150	15.69	15.75
	160	15.55	15.65
	170	15.57	15.56
	180	15.83	15.80
Tablet	190	10.84	9.68
	185	10.85	9.62
Laptop	180	15.59	15.75
Tablet	181	10.78	9.86
	182	10.82	9.64
	183	10.57	9.61
	184	10.67	9.73
	185	10.65	9.76
	190	10.77	9.59
	200	10.78	9.80
	210	10.88	9.57
	220	10.68	9.75

	230	10.69	9.87
	240	10.69	9.74
	250	10.64	9.70
	260	10.63	9.80
	270	10.71	9.71
	280	10.76	9.78
	290	10.64	9.72
	300	10.85	9.90
	310	10.57	9.89
	320	10.59	9.66
	330	10.66	9.63
	340	10.69	9.58
	350	10.56	9.82
	360	10.57	9.88

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

Mode	Angele (degrees)	Measured Power	
		5GHz 802.11a Ch120	
		(dBm)	
		Main	Aux.
Tablet	360	10.71	9.64
	350	10.77	9.65
	340	10.71	9.55
	330	10.57	9.57
	320	10.75	9.70
	310	10.66	9.64
	300	10.60	9.61
	290	10.55	9.83
	280	10.71	9.66
	270	10.87	9.64
	260	10.75	9.79
	250	10.81	9.88
	240	10.87	9.57
	230	10.63	9.74
	220	10.63	9.78
	210	10.70	9.86
	200	10.60	9.57
	190	10.85	9.75
Laptop	180	15.85	15.78
Tablet	185	10.88	9.86
	184	10.79	9.84
	183	10.78	9.61
	182	10.60	9.61
	181	10.65	9.80
Laptop	180	15.82	15.77
	179	15.72	15.64
	178	15.83	15.64
	177	15.74	15.72
	176	15.87	15.86
	175	15.84	15.84
	170	15.81	15.58
	160	15.74	15.64
	150	15.55	15.67

	140	15.87	15.58
	130	15.65	15.78
	120	15.69	15.69
	110	15.70	15.72
	100	15.85	15.70
	90	15.66	15.56
	80	15.82	15.60
	70	15.63	15.70
	60	15.85	15.78
	50	15.59	15.62
	40	15.76	15.58
	30	15.71	15.65
	20	15.56	15.78
	10	15.83	15.61
	0	15.83	15.73

Statement

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