



Maximum Permissible Exposure Evaluation

FCC ID:2AMM6EWN-8852BSN3DB&IC:26313-8852BSN3DB

Report No.	:	TBR-C-202501-0081-5
Applicant	:	Earda Technologies Co.,Ltd
Equipment Under Test (EUT)		
EUT Name	:	WiFi & BT combo module
Model No.	:	EWN-8852BSN3DB
Series Model No.	:	N/A
Brand Name	:	EARDATEK
Sample ID	:	HC-C-202501-0081-01-01
Receipt Date	:	2025-03-31
Test Date	:	2025-03-31 to 2025-04-30
Issue Date	:	2025-04-30
Standards	:	FCC Part 2.1091 RSS-102 Issue 6 December 15, 2023
Test Method	:	KDB 447498 D01 General RF Exposure Guidance v06
Conclusions	:	PASS
In the configuration tested, the EUT complied with the standards specified above.		
Test By	:	Gold. zhang Gold zhang
Reviewed By	:	Henry huang Henry huang
Approved By	:	Ivan Su Ivan Su
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.		

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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202501-0081-5	Rev.01	Initial issue of report	2025-04-30



1. General Information about EUT

1.1 Client Information

Applicant	:	Earda Technologies Co.,Ltd
Address	:	Block A, LianFeng Creative Industry Park, 2 JiSheng Road., HuangGe Town, NanSha District, Guangzhou, PRC.
Manufacturer	:	Earda Technologies Co.,Ltd
Address	:	Block A, LianFeng Creative Industry Park, 2 JiSheng Road., HuangGe Town, NanSha District, Guangzhou, PRC.

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	WiFi & BT combo module
Models No./HVIN	:	EWN-8852BSN3DB
Model Different	:	N/A
Product Description	:	Operation Frequency: Bluetooth&BLE: 2402MHz~2480MHz 2.4G Wi-Fi: 2412MHz~2462MHz U-NII-1: 5180MHz~5240MHz U-NII-2A: 5260MHz~5320MHz U-NII-2C: 5500MHz~5720MHz U-NII-3: 5745MHz~5825MHz
		Modulation Type: Bluetooth&BLE: GFSK, Pi/4-DQPSK, 8DPSK 802.11b: DSSS (DQPSK, DBPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11a: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM (QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (QPSK, BPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 1024QAM)
		Antenna Gain: See Table 1
Power Rating	:	DC 3.3V
Software Version	:	N/A
Hardware Version	:	N/A
Remark: The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.		



2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB
RF Power- Conducted	Level Accuracy: Above 1000MHz	± 0.95 dB
Power Spectral Density- Conducted	Level Accuracy: Above 1000MHz	± 3 dB
Occupied Bandwidth	Level Accuracy: 30MHz to 1000 MHz Above 1000MHz	$\pm 3.8\%$
Unwanted Emission- Conducted	Level Accuracy: 30MHz to 1000 MHz Above 1000MHz	± 2.72 dB
Temperature	/	$\pm 0.6^{\circ}\text{C}$
Humidity	/	$\pm 4\%$
Supply voltages	/	$\pm 2\%$
Time	/	$\pm 4\%$



3. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

Table 1 Max. Antenna Gain:

Band	Antenna Type	Antenna Gain(dBi)	
		Antenna 1	Antenna 2
Bluetooth	PCB	5.25	/
2.4G Wi-Fi		5.25	3.29
U-NII-1		5.14	4.39
U-NII-2A		5.36	5.40
U-NII-2C		5.78	5.55
U-NII-3		5.84	5.44
Remark: The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.			



4. Method of Measurement for FCC

4.1 EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.2 Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4.3 Simultaneous transmission MPE Considerations

According to KDB447498 D01 v06: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$



5 Test Result:

Worst MPE Result							
Test Mode	Antenna	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
Bluetooth&BLE	/	8.72	8±1	9	5.25	20	0.00529
2.4G b	Ant1	16.92	17±1	18	5.84	20	0.04817
	Ant2	17.15	17±1	18	5.55	20	0.04505
2.4G g	Ant1	16.79	17±1	18	5.84	20	0.04817
	Ant2	17.52	17±1	18	5.55	20	0.04505
2.4G n20	Ant1	16.88	16±1	17	5.84	20	0.03826
	Ant2	16.08	16±1	17	5.55	20	0.03579
2.4G n40	Ant1	14.81	14±1	15	5.84	20	0.02414
	Ant2	13.32	14±1	15	5.55	20	0.02258
2.4G ax20	Ant1	16.87	16±1	17	5.84	20	0.03826
	Ant2	16.15	16±1	17	5.55	20	0.03579
2.4G ax40	Ant1	14.83	14±1	15	5.84	20	0.02414
	Ant2	13.2	14±1	15	5.55	20	0.02258
5G a	Ant1	17.64	18±1	19	5.84	20	0.06064
	Ant2	18.03	18±1	19	5.55	20	0.05672
5G n20	Ant1	16.34	16±1	17	5.84	20	0.03826
	Ant2	16.48	16±1	17	5.55	20	0.03579
5G n40	Ant1	16.31	16±1	17	5.84	20	0.03826
	Ant2	16.73	16±1	17	5.55	20	0.03579
5G ac20	Ant1	16.07	16±1	17	5.84	20	0.03826
	Ant2	16.36	16±1	17	5.55	20	0.03579
5G ac40	Ant1	16.38	16±1	17	5.84	20	0.03826
	Ant2	16.69	16±1	17	5.55	20	0.03579
5G ac80	Ant1	15.95	16±1	17	5.84	20	0.03826
	Ant2	16.29	16±1	17	5.55	20	0.03579
5G ax20	Ant1	16.07	16±1	17	5.84	20	0.03826
	Ant2	16.31	16±1	17	5.55	20	0.03579
5G ax40	Ant1	16.28	16±1	17	5.84	20	0.03826
	Ant2	16.67	16±1	17	5.55	20	0.03579
5G ax80	Ant1	16.00	16±1	17	5.84	20	0.03826
	Ant2	16.29	16±1	17	5.55	20	0.03579

Note: The antenna gain used max. antenna gain



5.1 Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm ²)
300-1,500	F/1500
1,500-100,000	1.0

For: 2402~2480MHz&2412~2462MHz&5180~5825MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.06064\text{mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$.

5.2 Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		CDD
		Antenna 1	Antenna 2	
Bluetooth	2.4GHz	Yes	/	/
Bluetooth LE	2.4GHz	Yes	/	/
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	No
IEEE 802.11b	2.4GHz	Yes	Yes	No
IEEE 802.11g	2.4GHz	Yes	Yes	No
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes
IEEE 802.11ax HE20	2.4GHz	Yes	Yes	Yes
IEEE 802.11ax HE40	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes



5.3 Summary simultaneous transmission results

Antenna 1 and Antenna 2 for 2.4GWLAN& 5GWLAN

Worst Modulation Type	MPE Antenna 1 (mW/cm ²)	MPE Antenna 2 (mW/cm ²)	ΣMPE ratios	Limit	Results
WLAN	0.04817	0.04505	0.09322	1.0	PASS
RLAN	0.06064	0.05672	0.11736	1.0	PASS

Bluetooth and WiFi support Synchronization transmitter

Maximum MPE ratio	Maximum MPE ratio	ΣMPE ratios	Limit	Results
Bluetooth 0.00529	WiFi 0.11736	0.12265	1	PASS

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.



6 Method Of Measurement for IC

6.1. Applicable Standard

[RSS-102 Issue 6 December 15, 2023](#): Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands), sets out the requirements and measurement techniques used to evaluate radio frequency (RF) exposure compliance of radio communication apparatus designed to be used within the vicinity of the human body.

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB publication 447498 D01 General RF Exposure Guidance v06](#): Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

6.2 Evaluation Method and Limit

According to RSS-102 issue 6 Table 7, RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field (V _{RMS} /m)	Magnetic field (A _{RMS} /m)	Power density (W/m ²)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	58.07 / $f^{0.25}$	0.1540 / $f^{0.25}$	8.944 / $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 × 10 ⁻⁴ $f^{0.5}$	6.67 × 10 ⁻⁵ f	616000/ $f^{1.2}$

Frequency Band	f (MHz)	Limit of Power Density (W/m ²)
2.4G	2402	5.35
5G	5180	9.05
Note: Limit=0.02619$f^{0.6834}$ (where f is in MHz). The f in the limit is the frequency of the lowest Channel.		



6.3 Calculation Formula

Prediction of power density at the distance of the applicable MPE limit:

$S = PG/4\pi R^2$ = Power density (in appropriate units, e.g W/m²)

P = power input to antenna (in appropriate units, e.g W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g m)

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$\sum$ of MPE ratios ≤ 1.0



6.4 Evaluation Results

Worst MPE Result							
Test Mode	Antenna	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (m) [R]	Power Density (W/m ²) [S]
Bluetooth&BLE	/	8.72	8±1	9	5.25	0.2	0.0529
2.4G b	Ant1	16.92	17±1	18	5.84	0.2	0.4817
	Ant2	17.15	17±1	18	5.55	0.2	0.4505
2.4G g	Ant1	16.79	17±1	18	5.84	0.2	0.4817
	Ant2	17.52	17±1	18	5.55	0.2	0.4505
2.4G n20	Ant1	16.88	16±1	17	5.84	0.2	0.3826
	Ant2	16.08	16±1	17	5.55	0.2	0.3579
2.4G n40	Ant1	14.81	14±1	15	5.84	0.2	0.2414
	Ant2	13.32	14±1	15	5.55	0.2	0.2258
2.4G ax20	Ant1	16.87	16±1	17	5.84	0.2	0.3826
	Ant2	16.15	16±1	17	5.55	0.2	0.3579
2.4G ax40	Ant1	14.83	14±1	15	5.84	0.2	0.2414
	Ant2	13.2	14±1	15	5.55	0.2	0.2258
5G a	Ant1	17.64	18±1	19	5.84	0.2	0.6064
	Ant2	18.03	18±1	19	5.55	0.2	0.5672
5G n20	Ant1	16.34	16±1	17	5.84	0.2	0.3826
	Ant2	16.48	16±1	17	5.55	0.2	0.3579
5G n40	Ant1	16.31	16±1	17	5.84	0.2	0.3826
	Ant2	16.73	16±1	17	5.55	0.2	0.3579
5G ac20	Ant1	16.07	16±1	17	5.84	0.2	0.3826
	Ant2	16.36	16±1	17	5.55	0.2	0.3579
5G ac40	Ant1	16.38	16±1	17	5.84	0.2	0.3826
	Ant2	16.69	16±1	17	5.55	0.2	0.3579
5G ac80	Ant1	15.95	16±1	17	5.84	0.2	0.3826
	Ant2	16.29	16±1	17	5.55	0.2	0.3579
5G ax20	Ant1	16.07	16±1	17	5.84	0.2	0.3826
	Ant2	16.31	16±1	17	5.55	0.2	0.3579
5G ax40	Ant1	16.28	16±1	17	5.84	0.2	0.3826
	Ant2	16.67	16±1	17	5.55	0.2	0.3579
5G ax80	Ant1	16.00	16±1	17	5.84	0.2	0.3826
	Ant2	16.29	16±1	17	5.55	0.2	0.3579

Note: The antenna gain used max. antenna gain



6.5 Summary simultaneous transmission information

Modulation Type	Work Frequency Band	Transmit Antenna		CDD
		Antenna 1	Antenna 2	
Bluetooth	2.4GHz	Yes	/	/
Bluetooth LE	2.4GHz	Yes	/	/
IEEE 802.11a	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	No
IEEE 802.11b	2.4GHz	Yes	Yes	No
IEEE 802.11g	2.4GHz	Yes	Yes	No
IEEE 802.11n HT20	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT40	2.4GHz	Yes	Yes	Yes
IEEE 802.11ax HE20	2.4GHz	Yes	Yes	Yes
IEEE 802.11ax HE40	2.4GHz	Yes	Yes	Yes
IEEE 802.11n HT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11n HT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ac VHT80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE20	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE40	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes
IEEE 802.11ax HE80	U-NII-1/ U-NII-2A U-NII-2C/ U-NII-3	Yes	Yes	Yes

6.6 Summary simultaneous transmission results

Antenna 1 and Antenna 2 for 2.4GWLAN& 5GWLAN

Worst Modulation Type	MPE Antenna 1 (W/m ²)	MPE Antenna 2 (W/m ²)	MPE Antenna 1+2 (W/m ²)	Limit (W/m ²)	ΣMPE Ratios	Results
WLAN	0.4817	0.4505	0.9322	5.35	0.174	PASS
RLAN	0.6064	0.5672	1.1736	9.05	0.130	PASS

Bluetooth and WiFi support Synchronization transmitter

Maximum MPE ratio Bluetooth	Maximum MPE ratio WiFi	ΣMPE ratios	Limit	Results
0.0529	0.174	0.2269	1	PASS

Remark:

1. Output power including turn-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer.

Note

For a more detailed features description, please refer to the RF Test Report.

-----END OF THE REPORT-----

