TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2AG87ACM-DB-3-R3	
Test Report No..... :	TCT250401E037	
Date of issue..... :	Jul. 21, 2025	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Doodle Labs (SG) Pte Ltd	
Address..... :	601 MacPherson Road, Grantral Complex, Suite 07-15, Singapore 368242, Singapore	
Manufacturer's name ... :	Doodle Labs (SG) Pte Ltd	
Address..... :	601 MacPherson Road, Grantral Complex, Suite 07-15, Singapore 368242, Singapore	
Standard(s) ..... :	FCC CFR Title 47 Part 1.1307	
Product Name..... :	Industrial WiFi Transceiver	
Trade Mark ..... :	N/A	
Model/Type reference..... :	ACM-DB-3-R3, ACM-DB-2-R3, ACO-DB-3-R3, ACO-DB-2-R3, ACM-DB-3M, ACM-DB-2M, ACM-DB-3U, ACM-DB-2U, ACM-DB-3M-40, ACM-DB-2M-40	
Rating(s)..... :	DC 3.3V	
Date of receipt of test item ..... :	Apr. 01, 2025	
Date (s) of performance of test..... :	Apr. 01, 2025 ~ Jul. 21, 2025	
Tested by (+signature) ... :	Rleo LIU	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

General disclaimer:

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Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. General Product Information

1.1. EUT description

Product Name.....:	Industrial WiFi Transceiver
Model/Type reference.....:	ACM-DB-3-R3
Sample Number.....:	TCT250401E010-0101
Operation Frequency.....:	For 2.4GWIFI: 2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40)) For 5GWIFI: Band 1: 5180MHz~5240MHz Band 3: 5745MHz~5825MHz
Modulation Type.....:	For 2.4GWIFI: DSSS (802.11b), OFDM (802.11g/802.11n) For 5GWIFI: 256QAM, 64QAM, 16QAM, BPSK, QPSK
Antenna Type.....:	External Antenna
Antenna Gain.....:	Antenna 0: 3dBi Antenna 1: 3dBi Antenna 2: 3dBi
Rating(s).....:	DC 3.3V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

No.	Model No.	Tested with
1	ACM-DB-3-R3	☒
Other models	ACM-DB-2-R3, ACO-DB-3-R3, ACO-DB-2-R3, ACM-DB-3M, ACM-DB-2M, ACM-DB-3U, ACM-DB-2U, ACM-DB-3M-40, ACM-DB-2M-40	☐

Note: ACM-DB-3-R3 is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names, antenna number and antenna connector. MMCX and u.FL to be considered same. DUT is calibrated for Tx power at antenna port. The cable loss as below:
Type 1: MMCX to SMA/RP-SMA: 0.3db for 2.4G, 0.5db for 5G
Type 2: u.FL to SM/RP-SMA: 0.4db for 2.4G, 0.8db for 5G
Both types of antenna connections have been tested, and the worst case (ACM-DB-3-R3) is reported only.
Type 1: ACM-DB-3-R3, ACM-DB-2-R3, ACO-DB-3-R3, ACO-DB-2-R3, ACM-DB-3M, ACM-DB-2M, ACM-DB-3M-40, ACM-DB-2M-40
Type 2: ACM-DB-3U, ACM-DB-2U
The number in the third group of the model represent the number of antenna ports.

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2. General Information

2.1. Test environment and mode

Item	Normal condition
Temperature	+25ºC
Voltage	DC 3.3V
Humidity	56%
Atmospheric Pressure:	1008 mbar
Test Mode:	
Transmitting Mode:	Keep the EUT in continuous transmitting by select channel

2.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

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3. Facilities and Accreditations

3.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

  SHENZHEN TONGCE TESTING LAB

  Designation Number: CN1205

  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- A2LA-No.: 4320.01

  SHENZHEN TONGCE TESTING LAB

  The testing lab has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

3.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4. Limit

According to §1.1310, the limit is as follow,

TABLE 1 TO § 1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(I) LIMITS FOR OCCUPATIONAL/CONTROLLED EXPOSURE				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(II) LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*($180/f^2$)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

*f = frequency in MHz. * = Plane-wave equivalent power density.*

5. Test Results and Measurement Data

According to §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Remark: 1)
SISO mode:
For 2.4G WIFI: The maximum output power is in 802.11b mode at 2437MHz, with antenna 0 is 23.95dBm (248.31mW), 3dBi antenna gain(2.00 numeric antenna gain);
For Band 1: The maximum output power is in 802.11a mode at 5240MHz, with antenna 0 is 21.67dBm (146.89mW), 3dBi antenna gain(2.00 numeric antenna gain)
For Band 3: The maximum output power is in 802.11ac(VHT20) mode at 5745MHz, with antenna 0 is 22.57dBm (180.72mW), 3dBi antenna gain(2.00 numeric antenna gain)

MIMO mode:
For 2.4G WIFI: The maximum output power is in 802.11n(HT40) mode at 2437MHz, for total power is 26.96dBm (496.59mW), 3dBi antenna gain(with 2.00 numeric antenna gain)
For Band 1: The maximum output power is in 802.11n(HT40) mode at 5230MHz, for total power is 23.66dBm (232.27mW), 3dBi antenna gain(with 2.00 numeric antenna gain)
For Band 3: The maximum output power is in 802.11ac(VHT20) mode at 5745MHz, for total power is 26.55dBm (451.86mW), 3dBi antenna gain(with 2.00 numeric antenna gain.)

2) For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20cm, even if the calculation indicate that the MPE distance would be lesser.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = *Field Strength in Volts / meter*
P = *Power in Watts*
G=*Numeric antenna gain*
d=*Distance in meters*
S=*Power Density in milliwatts / square centimeter*

Substituting the MPE safe distance using d=20cm into above equation.
Yields: S=0.000199*P*G

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SISO mode:

Maximum Emissions Level					
Mode	**Power(mW)**	**numeric antenna gain**	**Power density (mW/cm^2)**	**Limit (mW/cm^2)**	**Result**
2.4G WIFI	248.31	2.00	0.098827	1.0	PASS
Band 1	146.89	2.00	0.058462		
Band 3	180.72	2.00	0.071927		

MIMO mode:

Maximum Emissions Level					
Mode	**Power(mW)**	**numeric antenna gain**	**Power density (mW/cm^2)**	**Limit (mW/cm^2)**	**Result**
2.4G WIFI	496.59	2.00	0.197643	1.0	PASS
Band 1	232.27	2.00	0.092443		
Band 3	451.86	2.00	0.179840		

********END OF REPORT********

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