

TEST REPORT

Applicant: Arad Connectivity Co., Ltd.
Address: 5F.-1, No. 63, Sec. 1, Hangzhou S. Rd.,
Zhongzheng Dist., Taipei City 100022 , Taiwan
(R.O.C.)
Equipment Type: MN54L series
Model Name: MN54L
Brand Name: Aradconn
FCC ID: 2BLIDMN54L
Test Standard: 47 CFR Part 2.1091
KDB 447498 D04 v01
Sample Arrival Date: Jun. 11, 2025
Test Date: Jun. 20, 2025 - Jul. 16, 2025
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ISSUED BY:

Shanghai Tejet Communications Technology Co., Ltd. Testing Center



Prepared by: Huang Xiaoqin **Reviewed by:** Cai Xueguo **Approved by:** Zhang Yanqin
(Laboratory Manager)

Huang Xiaoqin

Cai Xueguo

Zhang Yanqin

Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jul. 25, 2025</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Address	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China
Phone Number	+86-21-58180736

1.2 Test Location

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Location	1-2/F., Building 1, No.222, Xuanlan Road, Xuanqiao, Pudong New District, Shanghai, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1352. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 29671.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Arad Connectivity Co., Ltd.
Address	5F-1, No. 63, Sec. 1, Hangzhou S. Rd., Zhongzheng Dist., Taipei City 100022 , Taiwan (R.O.C.)

2.2 Manufacturer Information

Manufacturer	Arad Connectivity Co., Ltd.
Address	5F-1, No. 63, Sec. 1, Hangzhou S. Rd., Zhongzheng Dist., Taipei City 100022 , Taiwan (R.O.C.)

2.3 General Description for Equipment under Test (EUT)

EUT Name	MN54L series
Model Name Under Test	MN54L
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	L:14.5 mm* W:9.3 mm* H:2.1 mm*
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	BLE:1M&2M
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The requirement for the following technical information of the EUT was tested in this report:

Operating Mode	Bluetooth	
Frequency Range	Bluetooth	2402 ~ 2480 MHz
Exposure Category	General Population/Uncontrolled exposure	
Product Type	Mobile Device	

The product MN54L series is equipped with below antenna

Antenna Information	Antenna type	Manufacturer	Antenna peak gain (dBi)
	PCB	Pluse Electronics	2.20
	PCB	Pluse Electronics	3.30
	Dipole	Pluse Electronics	2.29
	PCB	Arad Connectivity Co., Ltd.	0.80
	Chip	Arad Connectivity Co., Ltd.	1.05

3 SUMMARY OF TEST RESULT

3.1 Test Standards

No.	Identity	Document Title
1	KDB 447498 D04 v01	447498 D04 Interim General RF Exposure Guidance v01

3.2 Limit Standards

No.	Identity	Document Title
1	47 CFR Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices

4 DEVICE CATEGORY AND LEVELS LIMITS

Mobile Devices:

CFR Title 47 §2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

FCC KDB 447498 D04 General RF Exposure Guidance v01 Limit

Evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i. e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole).

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} (\text{mW}) = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

5 ASSESSMENT RESULT

5.1 Output Power

Bluetooth		
Mode	BLE 1Mbps	BLE 2Mbps
Conducted Power (dBm)	8.46	7.76
Antenna Gain (dBi)	3.30	3.30
EIRP (dBm)	11.76	11.06

Note: This report listed the worst case conducted power value, please refer to RF test report No. BL-SH2560626-601 for more details.

5.2 Tune-up power

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
Bluetooth	【7.00,9.00】	【10.30,12.30】	【8.15,10.15】

Note1: ERP= EIRP -2.15dB.

Note2: According KDB 447498 D04, used the greater of maximum conducted power and ERP to compare with the threshold value Pth.

5.3 RF Exposure Evaluation Result

Evolution mode	f(MHz)	Distance (cm)	Maximum power (dBm)	Maximum power (mW)	Threshold Power (mW)	Verdict
Bluetooth	2402	20	10.15	10.35	3060.00	Pass

5.4 Conclusion

This EUT is deemed to comply with the reference level limits, therefore the basic restrictions are compliant with human exposure limits.

Statement

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--END OF REPORT--