



RF Exposure Evaluation Declaration

FCC ID: 2ALJ3AP541E
Applicant: HAN Networks Co., Ltd.
Product: HAN Access Point
Model No.: AP541e
Brand Name: HAN NETWORKS, HANNETWORKS
FCC Rule Part(s): FCC Part 2.1091
Result: Complies
Evaluation Date: 2026-05-21

Reviewed By:



Vincent Yu

Approved By:



Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report. Testing was performed in accordance with the applicable measurement procedures. The test results reported herein apply only to the specific item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
R26S1033075-U401	V01	Initial Report	2026-09-30	Valid

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1. General Information

1.1. Applicant

HAN Networks Co., Ltd.

101, 3rd Floor, Building 3, No.9 Compound, Yongfeng Road, Haidian District, Beijing, P.R. China

1.2. Manufacturer

HAN Networks Co., Ltd.

101, 3rd Floor, Building 3, No.9 Compound, Yongfeng Road, Haidian District, Beijing, P.R. China

1.3. Testing Facility

☒	Test Site - MRT Suzhou Laboratory	
	☐ Laboratory Location (Suzhou - Wuzhong)	
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China	
	☒ Laboratory Location (Suzhou - SIP)	
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China	
	☐ Laboratory Location (Suzhou - Wujiang)	
Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People's Republic of China		
Laboratory Accreditations		
A2LA: 3628.01		CNAS: L10551
FCC: CN1166		ISED: CN0001
☐	Test Site - MRT Shenzhen Laboratory	
	Laboratory Location (Shenzhen)	
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China	
	Laboratory Accreditations	
	A2LA: 3628.02	
FCC: CN1284		ISED: CN0105

1.4. Product Information

Product Name	HAN Access Point
Model No.	AP541e
Bluetooth Specification	Bluetooth_LE
ZigBee Specification	802.15.4
Wi-Fi Specification	802.11a/b/g/n/ac/ax/be
Operating Temperature	0 ~ 50 °C
Antenna Information	Refer to section 1.6
Operating Environment	Indoor Use
Power Type	AC/DC Adapter or PoE Injector
Accessory(ies)	
Adapter	Model No.: AA65U-540A Input Power: 100 – 240 V ~ 50/60 Hz, 1.6 A Output Power: 54 V = 1.2 A, 64.8 W
PoE Injector	Model: POE60U-1BT-X Input: 100-240 V ~ 1.5 A, 50-60 Hz, 98-104 VA Output: 56 V=0.535 A, 30 W PIN 3, 6+ PIN 1, 2 Return Output: 56 V=0.535 A, 30 W PIN 4, 5+ PIN 7, 8 Return
Notes: 1. The information of the EUT (Equipment Under Test) was provided by the manufacturer. The accuracy, completeness, and validity of the information are solely the responsibility of the manufacturer. 2. AC/DC Adapter and PoE Injector are not marketed in conjunction with the device.	

1.5. WLAN Configuration

Model No.	WLAN Antenna Port	WLAN Config 1 - Supporting Band	WLAN Config 2 - Supporting Band
AP541e	5GHz 4TX Port	5GHz Full Band: U-NII-1 (5150-5250 MHz) U-NII-2A (5250-5350 MHz) U-NII-2C (5470-5725 MHz) U-NII-3 (5725-5850 MHz)	5GHz Low Band: U-NII-1 (5150-5250 MHz) U-NII-2A (5250-5350 MHz)
	2GHz 4TX Port	2412 to 2462 MHz	2412 to 2462 MHz
	6GHz 4TX Port	U-NII-5 (5925-6425 MHz) U-NII-7 (6525-6875MHz)	5GHz High Band: U-NII-2C (5470-5725 MHz) U-NII-3 (5725-5850 MHz)
Note 1: WLAN Config 1 and WLAN Config 2 only differ in the software settings and there are no changes in the hardware. Note 2: For WLAN Config 2, only the 5GHz High Band was tested; the data for the 5GHz Low Band is referenced from WLAN Config 1.			

1.6. Antenna Details

Antenna Type	Frequency Band (MHz)	Antenna Gain (dBi)				Directional Gain (dBi)	
		Ant 0	Ant 1	Ant 2	Ant 3	For Power	For PSD
Bluetooth_LE / ZigBee Antenna							
PIFA	2400 ~ 2483.5	Antenna Gain (dBi): 4.59					
Wi-Fi Antenna (2.4 GHz / 5 GHz / 6 GHz)							
Omni-directional	2400 ~ 2483.5	3.30	3.30	3.30	3.30	3.30	9.32
	5150 ~ 5850	3.30	3.30	3.30	3.30	3.30	9.32
	5925 ~ 6425	4.40	4.40	4.40	4.40	4.40	10.42
	6525 ~ 6875	4.40	4.40	4.40	4.40	4.40	10.42
Notes:							
1. The EUT supports Cyclic Delay Diversity (CDD) mode for 802.11a/b/g/n/ac/ax/be.							
2. The EUT also supports Beamforming mode for 802.11n/ac/ax/be, not include 802.11a/b/g.							
3. All antenna information is provided by the manufacturer.							

1.7. Device Classification

According to the user manual, this device is classified as a Mobile Device. So, the RF exposure evaluation requirements of § 2.1091 for mobile device exposure conditions subject to MPE limits.

1.8. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 2.1091
- KDB 447498 D04 Interim General RF Exposure Guidance v01

2. RF Exposure Evaluation

2.1. Limits

According to FCC §1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b)

Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
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 ~ 1500	--	--	f/300	< 6
1500 ~ 100000	--	--	5	< 6
(B) Limits for General Population/ Uncontrolled Exposures				
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 ~ 1500	--	--	f/1500	< 30
1500 ~ 100000	--	--	1.0	< 30

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

2.2. MPE Exemptions

For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph §1.1307(b)(2) of this section): A single RF source is exempt if:

(Option A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph §1.1307(b)(3)(ii)(A) of this section.

Medical implant devices may only use this exemption and that in paragraph §1.1307(b)(3)(ii)(A);

(Option B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P is given by:

$$P_{th}(mW) = \{ERP_{20cm}(d/20 \text{ cm})^x \quad d \leq 20 \text{ cm}$$

$$P_{th}(mW) = \{ERP_{20cm} \quad 20 \text{ cm} < d \leq 40 \text{ cm}$$

Where

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

and

$$ERP_{20cm}(mW) = \{2040f \quad 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz}$$

$$ERP_{20cm}(mW) = \{3060 \quad 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}$$

(Option C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP 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 (1.64 linear value).

Table 1 to §1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency (MHz)	Threshold ERP (watts)
0.3 ~ 1.34	1920R ²
1.34 ~ 30	3450R ² /f ²
30 ~ 300	3.83R ²
300 ~ 1500	0.0128R ² f
1500 ~ 100000	19.2R ²

For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph §1.1307(b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph §1.1307(b)(3)(i)(A).

(B) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph §1.1307(b)(3)(i)(B) of this section for P_{th} , including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph §1.1307(b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph §1.1307(b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i .

ERP_j = the ERP of fixed, mobile, or portable RF source j .

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph §1.1307(b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k , as applicable from §1.1310 of this chapter.

2.3. Calculated Result

Product	HAN Access Point (AP541e)
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Tune-up Conducted Power (dBm)	Antenna Gain (dBi)	Tune-up ERP (dBm)	Tune-up ERP (mW)
Bluetooth_LE	2400 ~ 2483.5	9.96	4.59	12.40	17.38
ZigBee	2400 ~ 2483.5	9.38	4.59	11.82	15.21
2.4 GHz	2400 ~ 2483.5	23.78	3.30	24.93	311.17
5 GHz Full Band	5150 ~ 5850	23.70	3.30	24.85	305.49
5 GHz Low Band	5150 ~ 5350	23.64	3.30	24.79	301.30
5 GHz High Band	5470 ~ 5850	23.67	3.30	24.82	303.39
6 GHz	5925 ~ 7125	23.57	4.40	25.82	381.94

Note 1: Tune-up Conducted Power (dBm) is referenced from the reports (report No.: R26S1033075-U201 ~ U203 & U206 & U207).

Note 2: Tune-up ERP (dBm) = Tune up Conducted Power (dBm) + Antenna Gain (dBi) - 2.15.

For Bluetooth_LE/ZigBee/2.4GHz Wi-Fi/5GHz Wi-Fi Antenna, Option B

Test Mode	Frequency Band (MHz)	R (m)	Tune-up ERP (mW)	Thresholds ERP (mW)
Bluetooth_LE	2400 ~ 2483.5	0.20	17.38	3060.0
ZigBee	2400 ~ 2483.5	0.20	15.21	3060.0
2.4 GHz	2400 ~ 2483.5	0.20	311.17	3060.0
5 GHz Full Band	5150 ~ 5850	0.20	305.49	3060.0
5 GHz Low Band	5150 ~ 5350	0.20	301.30	3060.0
5 GHz High Band	5470 ~ 5850	0.20	303.39	3060.0

For 6GHz Wi-Fi Antenna, Option C

Test Mode	Frequency Band (MHz)	$\lambda / 2 \pi$ (m)	R (m)	Tune-up ERP (mW)	Thresholds ERP (mW)
6 GHz	5925 ~ 7125	0.0073	0.20	381.94	768

For multiple RF sources

WLAN Configuration	Support Band	Tune-up ERP (mW)	Thresholds ERP (mW)	Radio
WLAN Config 1	Bluetooth_LE	17.38	3060.0	0.0057
	ZigBee	15.21	3060.0	0.0050
	2.4 GHz	311.17	3060.0	0.1017
	5 GHz Full Band	305.49	3060.0	0.0998
	6 GHz	381.94	768.0	0.4973
WLAN Config 2	Bluetooth_LE	17.38	3060.0	0.0057
	ZigBee	15.21	3060.0	0.0050
	2.4 GHz	311.17	3060.0	0.1017
	5 GHz Low Band	301.30	3060.0	0.0985
	5 GHz High Band	303.39	3060.0	0.0991

Notes:

1. The distance R used in the MPE calculation is specified in the user manual.
2. For WLAN Config 1: The EUT supports simultaneous transmissions of Bluetooth_LE/ ZigBee, Wi-Fi 2.4 GHz, 5 GHz Full Band and 6 GHz, so the simultaneous transmissions ratios = $17.38/3060 + 311.17/3060 + 305.49/3060 + 381.94/768 = 0.7045$.
For WLAN Config 2: The EUT supports simultaneous transmissions of Bluetooth_LE/ ZigBee, Wi-Fi 2.4 GHz, 5 GHz Low Band and 5 GHz High Band, so the simultaneous transmissions ratios = $17.38/3060 + 311.17/3060 + 301.30/3060 + 303.39/3060 = 0.3050$.
So the max simultaneous transmissions radio = $0.7045 < 1$.

CONCLUSION:

The device qualifies for RF exposure test exemption at 20 cm distance.

The End