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RF Radiation Exposure Evaluation

In accordance with:

FCC KDB 447498 D01 v06

Integrated Control Technology Limited

WL-APW

Protege Wireless Access Point

FCC ID: UAU-WLAP

REPORT: E2503-1841-4

DATE: April, 2025



RF Radiation Exposure Evaluation Report

EMC Bayswater Test Report: E2503-1841-4
Issue Date: April, 2025

Product: Protege Wireless Access Point
Model No: WL-APW
Serial No: 9DCC0773 (Sample 1), 109A8E5E (Sample 2)
FCC ID: UAU-WLAP

Customer Details: Mr. Steven Whitaker
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Standard(s): FCC KDB 447498 D01 v06
RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES
FOR MOBILE AND PORTABLE DEVICES
CFR47 FCC Part 2, Subpart J, 2.1091
Radiofrequency radiation exposure evaluation: mobile devices.
CFR47 FCC Part 2, Subpart J, 2.1093
Radiofrequency radiation exposure evaluation: portable devices.

Results Summary: RF Radiation exposure requirements **Complied**

Test Date(s): 31st of March, 2025

Test House (Issued By): EMC Bayswater Pty Ltd
18/88 Merrindale Drive
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Victoria, 3136, Australia

FCC Accredited Test Firm Registration number: 527798
FCC Accredited Test Firm Designation number: AU0004

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The Integrated Control Technology Limited, WL-APW, Protege Wireless Access Point, measured EIRP is below the SAR exception threshold (20mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations therefore complied with the requirements of CFR47 FCC Part 2, Subpart J, 2.1093.

This is to certify that the necessary evaluations were made by EMC Bayswater Pty Ltd, and that the Integrated Control Technology Limited, WL-APW, Protege Wireless Access Point, has been tested in accordance with requirements contained in the appropriate commission regulations.

Prepared by:

Approved by:



Adnan Zaman
(EMC Test Engineer)



Neville Liyanapatabendige
(Manager)

30/04/2025 10:56

Date

RF Radiation Exposure Evaluation *for* Integrated Control Technology Limited

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1. Introduction

RF Radiation Exposure evaluation was performed on an Integrated Control Technology Limited, WL-APW, Protege Wireless Access Point in accordance with FCC KDB 447498 D01 v06.

2. Test Report Revision History

None

3. Report Information

EMC Bayswater Pty Ltd reports apply only to the specific samples tested under the stated test conditions. All samples tested were in good operating condition throughout the entire test program unless otherwise stated. EMC Bayswater Pty Ltd does not in any way guarantees the later performance of the product/equipment. It is the manufacturer's responsibility to ensure that additional production units of the tested model are manufactured with identical electrical and mechanical components. EMC Bayswater Pty Ltd shall have no liability for any deductions, inference or generalisations drawn by the clients or others from EMC Bayswater Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Bayswater Pty Ltd. This report shall not be reproduced except in full, without the written approval of EMC Bayswater Pty Ltd. This document may be altered or revised by EMC Bayswater Pty Ltd personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by EMC Bayswater Pty Ltd will nullify the document.

4. Product Details

4.1. Product Sample Details

The device, as supplied by the client, is described as follows:

Product:	Protege Wireless Access Point	
Model No:	WL-APW	
Serial No:	9DCC0773 (Sample 1), 109A8E5E (Sample 2)	
Firmware:	1.00.XXXX	
Software:	N/A	
Power Specifications 1:	PoE	
Power Specifications 2:	12VDC	
Transmitter details:	Description:	Type 2EL Wi-Fi + Bluetooth + 802.15.4 Tri-Radio Module
	Type:	Bluetooth 5.3
	Modulation:	GFSK
	Channels:	40
	Max power:	16 dBm
	Antenna:	PCB Trace Antenna Murata Design Type2EL-Antenna
	Antenna Gain:	+3.6 dBi
	FCC ID:	LBES5PL2EL
	IC:	772C-LBES5PL2EL
Dimensions:	10 cm x 10 cm x 2.5 cm (Length x Width x Height)	
Weight:	150 g	
EUT Type:	Tasted as tabletop.	

(Customer supplied product information)

4.2. Product description

The device has been described by the customer as follows:

“Wireless locking hub used to connect electronic wireless locks to control unit of an Access Control System.”

(Customer supplied product description information)

5. SAR and RF Exposure exception evaluation

5.1. SAR exception evaluation

As per Appendix A of KDB 447498 D01 General RF Exposure Guidance v06

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

SAR test exclusion threshold for 2402MHz transmitter is 38.5mW for 20mm distance.

SAR test exclusion threshold for 2426MHz transmitter is 38.2mW for 20mm distance

SAR test exclusion threshold for 2480MHz transmitter is 37.8mW for 20mm distance

- The measured maximum EIRP at 2402MHz is 38.0mW (Worst-case, Without Duty Cycle correction factor).
- The measured maximum EIRP at 2426MHz is 38.0mW (Worst-case, Without Duty Cycle correction factor).
- The measured maximum EIRP at 2480MHz is 36.3mW (Worst-case, Without Duty Cycle correction factor).

The measurement uncertainty was calculated at ± 1.4 dB. The reported uncertainty is an expanded uncertainty calculated using a coverage factor of approximately $k=2$ which gives a level of confidence of approximately 95%.

The measured EIRP is below the SAR exception threshold for 20mm distance.

5.2. RF Exposure Evaluation (MPE)

As per section 1.1310 of CFR 47 following Maximum Permissible Exposure (MPE) limits are applicable.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) 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
(B) 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

Limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields for 2402 to 2480MHz as per Table 1 of Section 15.1310 is 1 mW/cm² (General Population/Un-controlled).

Prediction Worst case:

Using equation

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

where: S = Power density

P = Power input to the antenna

G = Antenna gain

R = Distance to the center of radiation of the antenna

Band	Maximum Conducted Power @ Antenna (dBm)*	Antenna Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Distance (cm)	Calculated Power Density at 20cm (mW/cm ²)	Power Density Limit** (mW/cm ²)
2.4GHz BLE	12.2	+3.6	15.8	38.0	20	0.0075	1

*Worst-case, Without Duty Cycle correction factor

** MPE limit for General Population/Un-controlled exposure

Calculated minimum safe distance is 0.28cm

Table 1: Results for MPE Evaluation

6. Conclusion

The measured EIRP is below the SAR exception threshold (20mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations.