RF EXPOSURE EVALUATION REPORT

FCC ID	: 2BHFNHESTIAA2
Equipment	: NTN-LoRaWAN Dongle
Brand Name	: APAL
Model Name	: Hestia A2
Applicant	: Creative5 Inc. 7F, No. 300, Sec. 1, Neihu Rd., Neihu Dist. Taipei City, 11493, Taiwan
Manufacturer	: Creative5 Inc. 7F, No. 300, Sec. 1, Neihu Rd., Neihu Dist. Taipei City, 11493, Taiwan
Standard	: 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3786) and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.

Cona Huang

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA480227-01	Rev. 01	Initial issue of report	May 07, 2025

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	NTN-LoRaWAN Dongle
Brand Name	APAL
Model Name	Hestia A2
FCC ID	2BHFNHESTIAA2
Wireless Technology and Frequency Range	LoRa: 902 MHz ~ 928 MHz NTN Band 23: 2000 MHz ~ 2020 MHz NTN Band 24: 1626.5 MHz ~ 1660.5 MHz NTN Band 255: 1626.5 MHz ~ 1660.5 MHz
Mode	LoRa: OOK, FSK, GFSK NTN: BPSK, QPSK
HW Version	V1.0
EUT Stage	Identical Prototype

Reviewed by: Jason Wang

Report Producer: Paula Chen

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
LoRa	LoRa (125kHz)	20
	LoRa (500kHz)	20.8
NTN	Band 23	25
	Band 24	25
	Band 255	25

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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 Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			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/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Collocated Power Density Calculation

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum PG (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
LoRa (125kHz)	0.700	20.000	117.490	0.023	0.601
LoRa (500kHz)	0.700	20.800	141.254	0.028	0.601
NTN Band 23	5.482	25.000	1117.378	0.222	1.000
NTN Band 24	2.998	25.000	630.667	0.126	1.000
NTN Band 255	2.998	25.000	630.667	0.126	1.000

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.