NVLAP LAB CODE 600341-0

MAXIMUM PERMISSIBLE EXPOSURE EVALUATION REPORT

Applicant:	**Butlr Technologies Inc.**
Address:	**Suite 510, 800 Airport Blvd, Burlingame, CA 94010 USA**
Product Name:	**Hive**
FCC ID:	**2AZPC-GWDSRKWF**
Standard(s):	**47 CFR §1.1310, 47 CFR §2.1091, 47 CFR §15.247(i), 47 CFR §15.407(f)**
Report Number:	**2402T79164E-RF-00F**
Report Date:	**2024/8/5**

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

Reviewed By: Gavin Xu	**Approved By:** Ivan Cao
Title: RF Engineer	Title: EMC Manager

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CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402T79164E-RF-00F	Original Report	2024/8/5

1. GENERAL INFORMATION

1.1 General Description Of Equipment under Test

EUT Name:	Hive
EUT Model:	GWDSRKWF
Rated Input Voltage:	DC 12V from adapter or 802.3at stands from POE
EUT Received Date:	2024/5/31
EUT Received Status:	Good

2. RF EXPOSURE EVALUATION (MPE)

2.1 RF Exposure Evaluation

2.1.1 Applicable Standard

According to subpart 15.247(i) ,15.407(f)and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
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
1500–100,000	/	/	1.0	30

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

According to §1.1310 and §2.1091 RF exposure is calculated.

2.1.2 Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.1.3 Calculated Data:

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
ZigBee	2405-2480	2.5	1.78	6.5	4.47	20.00	0.002	1.0
2.4G Wifi	2412-2462	2.5	1.78	24	251.19	20.00	0.089	1.0
5.2G Wifi	5150-5250	-4.96	0.32	12	15.85	20.00	0.001	1.0
5.3G Wifi	5250-5350	-4.46	0.36	13	19.95	20.00	0.001	1.0
5.6G Wifi	5470-5725	-1.99	0.63	13.5	22.39	20.00	0.003	1.0
5.8G Wifi	5725-5850	-1.6	0.69	12.5	17.78	20.00	0.002	1.0

Note:
The Conducted output power including Tune-up Tolerance provided by manufacturer.

Simultaneous transmission:

2.4G Wifi and 5G Wifi can`t transmit simultaneously, but2.4G Wifi or 5G Wifi can transmit simultaneously with ZigBee:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

$S_{ZigBee}/S_{limit\text{-}ZigBee} + S_{2.4G\ Wifi}/S_{limit\text{-}2.4G\ Wifi}$

=0.002/1.0+0.089/1.0

=0.091

< 1.0

Result: Compliant. The device compliant Simultaneous transmission at 20cm distances.

APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment 2402T79164E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2402T79164E-RF-INP EUT INTERNAL PHOTOGRAPHS.

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