
1. RF Exposure Requirements

1.1 General Information

Client Information

Applicant: EcoFlow Inc.
Address of applicant: RM 401, Plant #1, Runheng Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, 518000 China

Manufacturer: EcoFlow Inc.
Address of manufacturer: RM 401, Plant #1, Runheng Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, 518000 China

General Description of EUT:

Product Type: Portable Power Station
Product Name: EcoFlow DELTA 3 Max
Trade Name: ECOFLOW; EF ECOFLOW
Model No.: EF-DL-H02-3M
Adding Model(s): /
Rated Input: AC Input: 100-120V~, 50/60Hz, 15A (Duration time < 3h when current exceeds 12A)
Solar/DC Input: DC 11-60V 13A, 500W Max
Total Output Power: 2674W
AC Output (Discharge Only): AC120V~, 60Hz, 2400W total, 20A(x4) Max per port
AC Output (Bypass Mode): AC100-120V~, 50/60Hz 13A total, 13A(x4) Max per port
Rated Output: 12V Output: DC12.6V 10A 126W Max
USB-A Fast Charge Output(1x): DC5V 3A, DC9V 2A, DC12V 1.5A 18W Max
USB-C Output (x1): DC5V/9V/12V/15V 3A ,DC20V 5A , 100W Max
USB-C Output (x2): DC5V/9V 3A ,DC12V/DC15V 2A , 30W Max per port, 30W total
Battery Capacity: 2048Wh DC51.2V 40Ah
Power Adapter Model: /
FCC ID: 2A2P9-EFDLH023M
Equipment Type: Mobile device

Technical Characteristics of EUT:

Bluetooth

Bluetooth Version: V5.3 (LE mode)

Waltek Testing Group (Shenzhen) Co., Ltd.
[Http://www.waltek.com.cn](http://www.waltek.com.cn)

Frequency Range:	2402-2480MHz
RF Output Power:	1Mbps:5.42dBm (Conducted) 2Mbps:11.73dBm (Conducted)
Data Rate:	1Mbps, 2Mbps
Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz
Type of Antenna:	Onboard Antenna
Antenna Gain:	3.63dBi
Wi-Fi 2.4G	
Support Standards:	802.11b, 802.11g, 802.11n, 802.11ax
Frequency Range:	2412-2462MHz for 802.11b/g/n/ax(HT/HE20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	14.59dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM, 1024QAM
Quantity of Channels:	11 for 802.11b/g/n/ax(HT/HE20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Onboard Antenna
Antenna Gain:	3.63dBi

1.2 RF Exposure Exemption

According to §1.1307(b)(3) and KDB 447498 D04 Interim General RF Exposure Guidance v01, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Option A: FCC Rule Part 1.1307 (b)(3)(i)(A):The available maximum time-averaged power is no more than 1mW, regardless of separation distance.

Option B: FCC Rule Part 1.1307 (b)(3)(i)(B): The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. P_{th} is given by:

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

Where

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

and

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

d = the separation distance (cm);

Option C: FCC Rule Part 1.1307 (b)(3)(i)(C): 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. R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters.

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$
1.34-30	$3,450 R^2/f^2$
30-300	$3.83 R^2$
300-1,500	$0.0128 R^2 f$
1,500-100,000	$19.2 R^2$

For Multiple RF sources: FCC Rule Part 1.1307(b)(3)(ii):

- (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).
- (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.

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

1.3 Calculated Result

Radio Access Technology	Prediction Frequency (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	Tune-Up Time-Averaged Power (dBm)	ERP (dBm)
Bluetooth	2402	11.73	3.63	100	12.00	13.48
Wi-Fi	2412	14.59	3.63	100	15.00	16.48

Frequency (MHz)	Option	Min. Distance (cm)	Max. Power (dBm) (mW)		Exposure Limit (mW)	Ratio	Result Pass/Fail
2402	C	20.00	13.48	22.28	768.00	0.03	Pass
2412	C	20.00	16.48	44.46	768.00	0.06	Pass

Note: 1. Time-Averaged Power=Output Power * Duty Cycle; ERP= Time-Averaged Power+ Antenna gain-2.15dB

2. Option A, B and C refers as clause 1.2.

3. For option B, Max (time-averaged power, effective radiated power (ERP)) converts to Max. Power. For option C, ERP converts to Max. Power;

4. For option B, P_{th} (mW) converts to Exposure Limit (mW); For option C, ERP (W) converts to Exposure Limit (mW).

5. Ratio= Tune-Up ERP (mW)/ Exposure Limit (mW)

Mode for Simultaneous Multi-band Transmission:

Radio Access Technology	Ratio 1	Ratio 2	Simultaneous Ratio	Limit	Result Pass/Fail
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Note: Bluetooth and Wi-Fi can't transmit at the same time.

Result: Pass