

# 1. RF Exposure Requirements

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## 1.1 General Information

### Client Information

Applicant:	CAD Audio,LLC
Address of applicant:	6573 Cochran Road,Stel Solon,OH44139,USA
Manufacturer:	Enbao Electronic Co., Ltd.
Address of manufacturer:	B3.3 ZONE,ENPING PARK,JIANGMEN INDUSTRIAL TRANSFER PARK, ENPING GUANDONG,CHINA.

### General Description of EUT:

Product Name:	Bodypack
Trade Name:	PROformance
Model No.:	PDW-700BPTX
Adding Model(s):	/
Rated Voltage:	Battery DC 1.5V*2
FCC ID:	OQ5-PDW-700BPTX
Equipment Type:	Portable device

### Technical Characteristics of EUT:

Frequency Range:	903.560-925.140MHz
Max. Field Strength:	74.37dBuV/m
Modulation:	/
Quantity of Channels:	84
Channel Separation:	260kHz
Antenna Type:	External Antenna
Antenna Gain:	-2dBi

## 1.2 RF Exposure Exemption

According to §1.1307(b)(3) and 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  $\lambda$  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)	Max. Field Strength (dBuV/m)	Antenna Gain (dBd)	Output Power (dBm)	Tune-Up Power (dBm)	ERP (dBm)
SRD	903.560	74.37	-4.15	-16.74	-16.00	-20.89

Frequency (MHz)	Option	Min. Distance (cm)	Max. Power (dBm) (mW)		Exposure Limit (mW)	Ratio	Result (Pass/Fail)
903.56	B	0.5	-16.00	0.03	8.28	0.01	Pass

- Note: 1. a. For Frequency <1GHz, ERP=E-104.8+20logD; Output Power=ERP- Antenna Gain;  
 b. For Frequency >1GHz, EIRP= E-104.8+20logD; Output Power=EIRP- Antenna Gain;  
 ERP=EIRP-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<sub>th</sub> (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	Ratio 3	Simultaneous Ratio	Limit	Result (Pass/Fail)
/	/	/	/	/	/	/

Result: Pass