

**IEEE C95.1  
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47 C.F.R. Part 1, Subpart I, Section 1.1310  
47 C.F.R. Part 2, Subpart J, Section 2.1091**

## **RF EXPOSURE REPORT**

**For**

**TimeLapse Camera**

**Model: TLC120**

**Trade Name: brinno**

*Issued to*

**Brinno Incorporated  
4F, No.107, Zhouzi St., Taipei City, 11493, Taiwan, (R.O.C.)**

*Issued by*

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## Revision History

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## 1. LIMIT

According to §15.247(i), 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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

## 2. EUT SPECIFICATION

<b>EUT</b>	TimeLapse Camera		
<b>Model</b>	TLC120		
<b>Trade Name</b>	brinno		
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> 802.11b/g: 2.412GHz ~ 2.462GHz Bluetooth 4.0: 2.402GHz ~ 2.480GHz <input type="checkbox"/> Others		
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others		
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5\text{mW/cm}^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1\text{mW/cm}^2$ )		
<b>Antenna Specification</b>	Print Chip Antenna : CIRO / PCAK0000-12 Antenna Gain : 1.00 dBi (Numeric gain: 1.26)		
<b>Maximum Average output power</b>	Bluetooth 4.0: -5.53 dBm (0.280 mW) IEEE 802.11b Mode: 9.10 dBm (8.128 mW) IEEE 802.11g Mode: 9.09 dBm (8.110 mW)		
<b>Maximum Tune up Power</b>	Bluetooth 4.0: -4.00 dBm (0.398 mW) IEEE 802.11b Mode: 11.00 dBm (12.589 mW) IEEE 802.11g Mode: 11.00 dBm (12.589 mW)		
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A		

### 3. TEST RESULTS

No non-compliance noted.

#### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$

Where  $E$  = Field strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

## 4. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

### Bluetooth 4.0:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)
1	2402	0.398	1.26	20	0.0001	1

### IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)
11	2462	12.589	1.26	20	0.0032	1

### IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)
11	2462	12.589	1.26	20	0.0032	1