



Report No.: T180523N07-MF  
Page 1 of 6 Rev. 00  
FCC ID: XEG-TN180BT-C

**IEEE C95.1  
KDB 447498 D03  
47 C.F.R. Part 1, Subpart I, Section 1.1310  
47 C.F.R. Part 2, Subpart J, Section 2.1091  
TEST REPORT**

**RF EXPOSURE REPORT**

**For**  
**ANALOG PLAYER**  
**Model: TN-180BT**  
**Data Applies To: N/A**  
**Trade Name: TEAC**

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Report No.: T180523N07-MF  
Page 2 of 6 Rev. 00  
FCC ID: XEG-TN180BT-C

## **Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 26, 2018	Initial Issue	ALL	Sunny Chang



## TABLE OF CONTENTS

<b>1. LIMIT .....</b>	<b>4</b>
<b>2. EUT SPECIFICATION .....</b>	<b>4</b>
<b>3. TEST RESULTS .....</b>	<b>5</b>
<b>4. MAXIMUM PERMISSIBLE EXPOSURE .....</b>	<b>6</b>

## 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>	ANALOG PLAYER		
<b>Model</b>	TN-180BT		
<b>RF Module</b>	BRITO	<b>Model:</b>	BLTTM8670
<b>Frequency band (Operating)</b>	<input type="checkbox"/> 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a/n HT20: 5.180GHz ~ 5.240GHz / 5.745 ~ 5.825GHz 802.11n HT40: 5.190GHz ~ 5.230GHz / 5.755~ 5.795GHz 802.11ac VHT80: 5.210GHz / 5.775GHz <input checked="" 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 = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )		
<b>Antenna Specification</b>	Dipole Antenna / Gain: 2.04 dBi (Numeric gain: 1.60) worst		
<b>Maximum Average output power</b>	Bluetooth 3.0: 5.813 dBm (3.813 mW) Bluetooth 4.0: 5.038 dBm (3.190 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:

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

$$d (cm) = d(m) / 100$$

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 3.0 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
Mid	2441	3.813	1.60	20	0.0012	1	Pass

### Bluetooth 4.0 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	Limit (mW/cm2)	Result
High	2480	3.190	1.60	20	0.0010	1	Pass