

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Bluetooth Bedside LED Color Changing Clock Radio with USB Charging for Mobile Devices and Melody
<b>Model Number</b>	iBT290/iBT290N,iBT290, iBT290X (X could be any alphabet from a to Z, denotes different cabinet color)
<b>FCC ID</b>	EMOIBT290N
<b>Antenna gain (Max)</b>	0dBi
<b>Operation Frequency</b>	2402-2480MHz
<b>Input Rating</b>	DC 7.5V from adapter
<b>Classification Per Stipulated Test Standard</b>	§15.247(i), §2.1093
<b>Kind of Device: Bluetooth Ver.4.2</b>	
<b>Modulation</b>	BT:(GFSK, $\pi/4$ -DQPSK,8DPSK)
<b>Max. output power</b>	BT: 6.04dBm(0.004018 W)

### Test Requirement:

## RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

## 1 Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = Power density in  $mW/cm^2$

$P_{out}$  = output power to antenna in mW

$G$  = Numeric gain of the antenna relative to isotropic antenna

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE,  $1mW/cm^2$ . If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## 2 Measurement Result

Antenna gain: 0 dBi

BT DSS:

Transmit Frequency(MHz)	Mode	Measured Power (dBm)	Tune up Power (dBm)	Max tune up power (dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm <sup>2</sup> )	Power density Limits (mW/cm <sup>2</sup> )
2.402	GFSK	3.78	3±1	4	2.51189	0	1	0.000499723	1
2.441	GFSK	3.56	3±1	4	2.51189	0	1	0.000499723	1
2.480	GFSK	3.32	3±1	4	2.51189	0	1	0.000499723	1
2.402	Π/4-DQPSK	5.72	5±1	6	3.98107	0	1	0.000792007	1
2.441	Π/4-DQPSK	5.50	5±1	6	3.98107	0	1	0.000792007	1
2.480	Π/4-DQPSK	5.32	5±1	6	3.98107	0	1	0.000792007	1
2.402	8DPSK	6.04	6±1	7	5.01187	0	1	0.000997078	1
2.441	8DPSK	5.88	6±1	7	5.01187	0	1	0.000997078	1
2.480	8DPSK	5.80	6±1	7	5.01187	0	1	0.000997078	1

Signature:

A handwritten signature in black ink, appearing to be 'Lisa Wang', written over a light blue circular stamp.

Lisa Wang  
Date: 2019-08-22