FCC ID : 2BNJ6-HYPAWAVE

1. 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^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	**--**	**--**	**F/300**	**6**
1500-100000	**--**	**--**	**5**	**6**
(B) Limits for General Population/Uncontrol Exposures				
300-1500	**--**	**--**	**F/1500**	**6**
1500-100000	**--**	**--**	**1**	**30**

Friis transmission formula: Pd= (Pout*G)\ ($4*pi*R^2$)

Where

Pd= Power density in mW/cm^2.

Pout=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 20cm.

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

2. EUT TECHNICAL DESCRIPTION

Product Name:	Portable television
Model Number:	HYPAWAVE
Power Supply:	Battery 192.4Wh AC 120V/60Hz by Adapter Adapter: Model: BCT180600-157ED Input: 100-240V~50/60Hz, Max 1.4A Output: 18V, 6A
Temperature Range:	0℃~50℃

Bluetooth Version:	V5.0
Data Rate:	1Mbps for GFSK modulation 2Mbps for π/4-DQPSK modulation 3Mbps for 8DPSK modulation
Modulation:	GFSK, π/4-DQPSK, 8DPSK
Operating Frequency Range(s):	2402-2480MHz
Number of Channels:	79 channels
Antenna Type:	Integrated Antenna
Antenna Gain:	2.64dBi

BLE Version:	V5.0
Device Type:	Bluetooth with BLE mode
Data Rate :	1Mbps and 2Mbps
Modulation:	GFSK
Operating Frequency Range:	2402-2480MHz
Number of Channels:	40 Channels
Antenna Type:	Integrated Antenna
Antenna Gain:	2.64dBi

IEEE 802.11 WLAN Mode Supported:	802.11b 802.11g 802.11n(20MHz channel bandwidth) 802.11n(40MHz channel bandwidth)
Modulation:	DSSS, OFDM
Operating Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
Number of Channels:	11 channels for 802.11b/g/n(HT20) 7 Channels for 802.11n(HT40)
Antenna Type:	Integrated Antenna
Antenna Gain:	Ant1: 2.64dBi

3. Measurement Result

Mode	Frequency （MHz）	Max Power (dBm)	Antenna gain (dBi)	Antenna Gain Numeric	R (cm)	Evaluation result (mW/cm2)	Power density Limits (mW/cm2)
BT	2402	2.06	2.64	1.84	20	0.001	1.0000
BLE	2402	6.73	2.64	1.84	20	0.002	1.0000
2.4G WIFI	2412	14.00	2.64	1.84	20	0.009	1.0000

NOTE: All the modes are tested, only the worst data are described in the table.

Conclusion of simultaneous transmitter:
They can transmit simultaneously, the formula of calculated the MPE is:

CPD1/LPD1+CPD2/LPD2+……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Therefore the worst-case situation is 0.002/1+ 0.009/1= 0.011, which is less than 1, this confirmed that the device comply with FCC 1.1310 MPE limit.

----- The End -----