1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant:	Hangzhou BroadLink Technology Co., Ltd.
Address of applicant:	Unit C,Building 1,No.57 Jiang'er Road,Changhe Street,Binjiang District,Hangzhou,Zhejiang,P.R.China
Manufacturer:	Hangzhou BroadLink Technology Co., Ltd.
Address of manufacturer:	Unit C,Building 1,No.57 Jiang'er Road,Changhe Street,Binjiang District,Hangzhou,Zhejiang,P.R.China

General Description of EUT:

Product Name:	WiFi Module
Trade Name	BroadLink
Model No.:	BL3383-P
Adding Model(s):	/
Rated Voltage:	DC3.3V
Software Version:	V60035
Hardware Version:	1V2
FCC ID:	2ATEV-BL3383-P
Equipment Type:	Mobile Device

Technical Characteristics of EUT:	
Wi-Fi	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20)
RF Output Power:	20.10dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20)
Channel Separation:	5MHz
Type of Antenna:	PCB Antenna
Antenna Gain:	1dBi
Bluetooth	
Bluetooth Version:	V4.2 (BLE mode)
Frequency Range:	2402-2480MHz
RF Output Power:	3.17dBm (Conducted)
Data Rate:	1Mbps
Modulation:	GFSK
Quantity of Channels:	40
Channel Separation:	2MHz

Type of Antenna:	PCB Antenna
Antenna Gain:	1dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, 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.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$S = (30*P*G) / (377*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Wi-Fi

Maximum Tune-Up output power: 20.50(dBm)

Maximum peak output power at antenna input terminal: 112.2(mW)

Prediction distance: >20(cm)

Prediction frequency: 2462 (MHz)

Antenna gain:1.0(dBi)

Directional gain (numeric gain): 1.26

The worst case is power density at prediction frequency at 20cm: 0.0281(mw/cm^2)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Bluetooth

Maximum Tune-Up output power: 3.50(dBm)

Maximum peak output power at antenna input terminal: 2.24 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2440 (MHz)

Antenna gain: 1.0(dBi)

Directional gain (numeric gain): 1.26

The worst case is power density at prediction frequency at 20cm: 0.0006 (mw/cm^2)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

WIFI and BT is the use the same antenna cannot simultaneous transmission;

Result: Pass