RF Exposure Evaluation

of

E.U.T. : 802.11g Outdoor Hotspot (90° Sector antenna integrated)

FCC ID. : QZGBL5201-001

MODEL : BL5201

for

APPLICANT : K-Best Technology Inc.

ADDRESS : 2Fl. –1, No.185, Ko Wang Rd., Kau Yuan Tsun, Lung Tan Hsiang, Tao Yuan Hsien, Taiwan

Prepared by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34, LIN 5, DING FU TSUN, LINKOU HSIANG,
TAIPEI HSIEN, TAIWAN, R.O.C.
Tel:(02)26023052 Fax:(02)26010910
http://www.etc.org.tw ; e-mail: etcemi@seed.net.tw
Report Number : ET94R-02-063

Product Information:

Type of EUT: 802.11g Outdoor Hotspot (90° Sector antenna integrated)
FCC ID: QZGBL5201-001
Manufacturer: K-Best Technology Inc.
Model: BL5201
Description: The 802.11g WLAN outdoor hotspot-54Mbps Wireless outdoor Unit, are specially designed for Point-to-Point and Point-to-Multipoint applications, offering long distance connections between buildings at a speed of up to 54Mbps. Fully compliant with IEEE802.11b/g standard, the Outdoor Unit (OUD) provides powerful features such as the Windows-based configuration utility, MAC address filtering, WEP security, WDS application and more.
Maximum conducted output power (measured): **21.49** dBm or **140.93** mW

The following table lists the provided authorized antennas:

Antenna Type	Antenna Gain	
	(dBi)	Numeric
Integrated Panel Antenna	12.0	15.85

Below is an example of the RF Exposure Statement:

IMPORTANT NOTE:

To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

Relative Requirement for Compliance

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following:

TABLE 1 – LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0 ……	614	1.63	*(100)	6
3-30 ……	1842/f	4.89/f	*($900/f^2$)	6
30-300 ……	61.4	0.163	1.0	6
300-1500 ……	……	……	f/300	6
1500-100,000 ……	……	……	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34 ……	614	1.63	*(100)	30
1.34-30 ……	824/f	2.19/f	*(180/f2)	30
30-300 ……	27.5	0.073	0.2	30
300-1500 ……	……	……	f/1500	30
1500-100,000 ……	……	……	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1.0 mW/cm^2 uncontrolled exposure limit. The formula shown in OET Bulletin 65 is used in the calculation.

Equation from page 19 of OET Bulletin 65, Edition 97-01 is:

$$S = PG / 4\pi R^2$$

where: 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

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

hence

$$R = (PG / 4\pi S)^{1/2}$$

For our device

P = 140.93 mW

G = 15.85

S = Exposure limit = 1.0 mW/cm^2

$R = ((140.93 * 15.85) / (4*\pi*1.0))^{1/2}$

= **13.33 cm**

For complying the FCC limits for general population/uncontrolled exposure, the minimum MPE distance is 13.33 cm.

This means that according to OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), the equipment fulfills the requirements on power density for general population/uncontrolled exposure and therefore fulfills the requirements of 47 CFR Part 15.247 (b)(5).