

## MPE Estimates for Co-Located Device

### FCC ID: KBCIX600-MC75

#### GSM/GPRS

Antenna Type	Antenna Part No.	Transmit Frequency	Max Peak Conducted Output Power	Antenna Gain	Minimum Antenna Cable Loss	Power Density @ 20 cm	General Population Exposure Limit from 1.1310	Ratio of Power Density to the Exposure Limit
		(MHz)	(mW)	(dBi)	(dB)	(mW/cm <sup>2</sup> )	(mW/cm <sup>2</sup> )	
Internal Skycross WAN	59-0479-001	1880	724.4	-0.3	1.76	0.095	1	0.095
Internal Skycross WAN	59-0479-001	836	1410	3.8	0.89	0.548	0.55	0.984
External MaxRad	BMLPVDB800/1900	1880	724.4	3	4.61	0.099	1	0.099
External MaxRad	BMLPVDB800/1900	836	1410	3	2.45	0.318	0.55	0.571
<b>Worst Case Ratio of Power Density to the Exposure Limit</b>								
= 0.984 - duty cycle not considered								
= 0.492 - duty cycle of 50% applied								

If source based time averaging is considered, the power density at 20 cm can be further reduced [per 2.1091(d)(2)]. The EUT is a GSM/EDGE radio so the time-averaged power density is actually 4/8 the value of the un-modulated carrier. With source-based time averaging applied the ratio of power density to the exposure limit is 0.492.

### Excerpts from TCB Training, April 3, 2002, “Mobile Transmitters”, Slide 6:

*“Devices operating in multiple frequency bands*

- *When RF exposure evaluation is required for TCB approval*
  - *Separate antennas – estimated minimum separation distances may be considered for the frequency bands that do not require evaluation or TCB approval, however, the estimated distance should take into account the effect of co-located transmitters. (Note 24)*

*Note 24 According to multiple frequency exposure criteria, the ratio of field strength or power density to the applicable exposure limit at the exposure location should be determined for each transmitter and the sum of these ratios must not exceed 1.0 for the location to be compliant.”*

The sum of the ratio(s) (power density to the exposure limit) does not exceed 1.0; therefore, the exposure condition is compliant with FCC rules.

**MPE Estimates for Co-located Device**

**FCC ID: KBCIX600-IWLBT**

**IEEE 802.11 (a) (b) g)**

Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/c m <sup>2</sup> )	General Population Exposure Limit from 1.1310 (mW/cm <sup>2</sup> )	Ratio of Power Density to the Exposure Limit
PiFa MAIN	25.90215.001	5320	100.69	2.26	0	0.034	1	0.034
PiFa MAIN	25.90215.001	2462	92.9	2.41	0	0.032	1	0.032
Worst Case Ratio of Power Density to the Exposure Limit = 0.034								

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**Bluetooth Radio**

Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/c m <sup>2</sup> )	General Population Exposure Limit from 1.1310 (mW/cm <sup>2</sup> )	Ratio of Power Density to the Exposure Limit
Etenna's AccuWave	EA2400	2402	0.85	3	0	0.0003	1	0.0003
Worst Case Ratio of Power Density to the Exposure Limit = 0.0003								

sourced based time averaging applied

Per Note 24 shown below, the Sum of Worst Case Power Ratios cannot exceed 1.0

<b>MC75 GSM/GPRS</b> Worst Case Ratio of Power Density to the Exposure Limit	<b>802.11a Radio</b> Worst Case Ratio of Power Density to the Exposure Limit	<b>Bluetooth</b> Worst Case Ratio of Power Density to the Exposure Limit		<b>Sum of Worst Case Ratios (Power Density to the Exposure Limit)</b>	<b>FCC Limit for Sum of Worst Case Ratios</b>		
0.492	0.034	0.0003		0.5263	1.0	PASS	
