SAR Test Exemption Justification
In Touch Blood Glucose Monitoring System (BG200)
FCC ID: 2AA923614-04

Number of transmissions per day.

The average patient will use this device to measure their blood glucose 2-3 times per day. Patients with more serious monitoring needs may need to take a blood glucose measurement up to 8 times per day: before and after each meal, plus before and after a snack. The 8 tests are performed 2 hours apart on average in a 24 hour period.

RF transmit duration per measurement.

When a measurement is taken, the device will upload the encrypted reading with metadata back to the server. The maximum size of an encrypted glucose measurement is 512 bytes. If the data transfer is not successful, an immediate retry will not be performed. The GPRS module will be in a passive network receive mode for the remainder of the time.

Since the transceiver in the device is a GPRS Class 10 radio, the maximum (CS-4 GMSK) upload data rate is 48.2 Kbps. The minimum upload rate (CS-1) is 18.1 Kbps. The worst case scenario for transmitting a measurement is sending a total of 512B, uploaded at 18.1 Kbps. The calculation yields

512 bytes * 8 bits/byte = 4096 bits

4096 bits / 18100 bits/sec = 0.226 seconds per upload Tx

The average (worst case) transmission time will be 0.226 seconds per 2 hours for the most active patients. In addition to the data transmission time, there is a GPRS and TCP connection setup time which has been measured to be between 5 and 20 seconds depending on network condition and location.

The worst case Duty Factor can then be calculated as.

(20 second connection setup + 0.226 second Tx) / (2 hours * 3600 seconds/hour) = 0.0028

Source-base time average EIRP table

Per KDB 447498 D01 Clause 4.3.1.1: Using a 5 mm distance in the SAR exemption calculations for general population exposure:

GPRS 850

Frequency (MHz)	EIRP (mW)	Source-Based Time-Averaged EIRP (mW)	Calculation Result	Body SAR Exemption Threshold	Extremity SAR Exemption Threshold	SAR Required
824.2	1361.44	4	0.69	3	7.5	
836.6	1527.56	4	0.78	3	7.5	**No**
848.8	1321.29	4	0.68	3	7.5	

GPRS 1900

Frequency (MHz)	EIRP (mW)	Source-Based Time-Averaged EIRP (mW)	Calculation Result	Body SAR Exemption Threshold	Extremity SAR Exemption Threshold	SAR Required
1850.2	935.4	3	0.48	3	7.5	
1880	1044.72	3	0.54	3	7.5	**No**
1909.8	1258.92	4	0.65	3	7.5	

Conclusions: For both the 850 MHz and 1900 MHz bans, SAR testing is not required due to the SAR exemption calculation result being less than 3.0 and 7.5 for body and extremity SAR.