## *3.4 Summary of Design Characteristics*

Type of Emissions:
RF Beacon Transmitter: Pulsed Carrier Wave, 2K98P0N
GSM Tranceiver: As specified in ITU-T G.722, 200KD2E

Frequency Range:
RF Beacon Transmitter:
US: 219.56 MHz
219.60(nominal) MHz
219.64 MHz
Europe: 433.92 MHz
GSM:
Band 1 (US-PCS1900)
Tx: 1850-1910 MHz
Rx: 1930-1990 MHz
Band 2 (US-GSM850)
Tx:824.2 - 848.8 MHz
Rx: 869.2 - 893.8 MH
Band 3 (Europe – DCS1800)
Tx: 1710.2 - 1784.8 MHz
Rx: 1805.2 - 1879.8 MHz
Band 4 (Europe – GSM900)
Tx: 880.2 - 914.8 MHz
Rx: 925.2 - 959.8 MHz

Necessary Bandwidth:
RF Beacon Transmitter: <6.25 kHz/channel
GSM: 200 kHz/channel;
(US) PCS1900: 298 channels
(US) GSM850: 121 channels
(Europe) GSM900: 171 channels
(Europe) DCS1800: 371 channels

Type of Modulation:
RF Beacon Transmitter: None
GSM: GMSK

Operating Power Values:
RF Beacon Transmitter: 20±2 dBm nominal maximum output power
GSM: PCS1900 Class 1 (1 W): 30±2 dBm nominal maximum output power
GSM850 Class 4 (2 W): 33±2 dBm nominal maximum output power
DCS1800 Class 1 (1 W): 30±2 dBm nominal maximum output power
GSM900 Class 4 (2 W): 33±2 dBm nominal maximum output power

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| DC Voltage applied: | 3.3-4.4V supplied by battery |
| DC Current: | 2.0A Peak (burst), 400 mA average, and 10 mA sleep-mode<br>~0 μA idle-mode (on magnetic plate) |
| Antennas: | RF Beacon: Loop (0 dBi peak gain)<br>GPS: Cavity type (0 dBi peak gain)<br>GSM: Dual-folded monopole<br>Pattern: omnidirectional<br>Peak Gain: 0±3 dBi<br>S11 (850MHz): -4.079 dB<br>S11 (900 MHz): -5.036 dB<br>S11 (1800 MHz): -4.839 dB<br>S11 (1900 MHz): -5.097 dB |
| Overall Dimensions: | Thickness: 8.80mm (0.3465")<br>Width: 47.50mm (1.870") - PCB width<br>Length: 120.52mm (4.745") – up to 8.78mm (0.346”) may extend into monetary riffle |