RF EXPOSURE ANALYSIS

EQUIPMENT

Type of equipment:	Data Collection Unit
Brand name:	SCA
Type / Model:	DCU / 682920
Manufacturer:	SCA Hygiene products AB By
request of:	SCA Hygiene products AB

Operating frequency: 2405 MHz; Output Power: 2 dBm.
Contains certified Cell / PCS Module FCC ID: QIPEHS6; IC: 7830A

REQUIREMENT

CFR 47 §1.1310

CALCULATIONS

2,4 GHz radio's Highest output power to antenna is 2 dBm
With +1.6 dBi antenna gain EIRP is 3.6 dBm or 2.3 mW

850 MHz cellular radio's highest output power to antenna is 1.119 W (with DC=50%)
With +1 dBi antenna gain EIRP is 1.41 W
1900 MHz cellular radio's radio's highest output power to antenna is 0.561 W (with DC=50%)
With +2.0 dBi antenna gain EIRP is 0.886 W

A test separation distance of 20 cm is used.

A worst case Power Density is calculated according to formula:

$$S = \frac{EIRP}{4 \times \pi \times r^2}$$

Maximum power densities are at the distance of 20 cm:

S = 0.0023 / (4 × π × $0{,}2^2$) = 0.0046 W/m^2 = 0.00046 mW/cm^2 at 2405 MHz
S = 1.41 / (4 × π × $0{,}2^2$) = 2.81 W/m^2 = 0.281 mW/cm^2 at 850 MHz
S = 0.89 / (4 × π × $0{,}2^2$) = 1.77 W/m^2 = 0.177 mW/cm^2 at 1900 MHz

LIMITS & EVALUATIONS:

Standard	Limit (MPE), mW/cm²	Power Density, S mW/cm²	Result
CRF 47 §1.1310	1	0.0005 at 2405 MHz	PASS
CRF 47 §1.1310	850/1500 = 0.567	0.281 at 850 MHz	PASS
CRF 47 §1.1310	1	0.177 at 1900 MHz	PASS

Simultaneous transmission

KDB 447498 D01 section 7.2: Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.

GSM 850 and 2.4 GHz transmitter transmitting simultaneously
0.281/0.567 + 0.0005/1 = 0.5

GSM 1900 and 2.4 GHz transmitter transmitting simultaneously
0.177/1 + 0.0005/1 = 0.18

Result

The EUT meets the RF Exposure requirements for distance of 20 cm.