



Excellence in Compliance Testing

Certification Exhibit

**FCC ID: SK9PMCR2
IC: 864G-PMCR2**

**FCC Rule Part: 15.247, 15.249
IC Radio Standards Specification: RSS-210**

ACS Report Number: 10-0153.W04.11.A

**Manufacturer: Itron, Inc.
Model: PMCR2**

RF Exposure

General Information:

Applicant: Itron Electricity Metering Inc.
 ACS Project: 10-0153.W04.11.A
 FCC ID: SK9PMCR2
 Device Category: Mobile
 Environment: General Population/Uncontrolled Exposure
 Exposure Conditions: Greater than 20 centimeters
 Simultaneous Tx: Yes

Technical Information:

Radio	900 MHz LAN	2.4GHz Zigbee (Register PCB)	2.4GHz Zigbee (Cell Relay PCB) ¹	CDMA Modem Module FCC ID: N7N-MC5725 IC:2417C-MC5725
Antenna Type	Phantom Omni-directional	Stud Mount Omni-directional	Stud Mount Omni-directional	Mobile Low Profile Omni-directional
Antenna Model	TRA9023	MMSO2300	MMSO2300	MLPVDB800/1900S
Antenna Gain	3dBi	0dBi	0dBi	800 Band: 3dBi 1900 Band: 4dBi
Conducted Power	24.59dBm	15.16dBm	Note1	800 Band: 29.23dBm 1900 Band: 28.83dBm
Maximum EIRP	0.574W	0.033W	Note1	800 Band: 1.671W 1900 Band: 1.919W
Maximum ERP	0.350W	0.020W	Note1	800 Band 0: 1.019W 1900 Band: 1.170W

Note 1: The Cell Relay 2.4GHz low power Zigbee contribution to the overall MPE calculation is negligible and therefore will not be included in the power density calculations below.

MPE Calculation:**Power Density**

The Power Density (mW/cm^2) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

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)

Note: P (power input to the antenna) for the CDMA modem is peak power and was provided from the original FCC certification report.

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
902.25	24.59	0.60	287.74	3	1.995	20	0.114
2405	15.16	1.00	32.81	0	1.000	20	0.007
836.5	29.23	0.56	837.53	3	1.995	20	0.332
1880	28.83	1.00	763.84	4	2.512	20	0.382

Summation of Power Densities – Simultaneous Transmissions

This device contains multiple transmitters which can operate simultaneously and therefore the maximum RF exposure is determined by the summation of power densities.

The maximum power density as calculated by a summation of power densities for each simultaneous transmission combination as follows:

CDMA Modem Operating in the 800MHz Cellular Band:

900MHz LAN:	0.114 (mW/cm ²)
2.4GHz Zigbee:	0.007 (mW/cm ²)
CDMA 800:	0.332 (mW/cm ²)
<u>TOTAL:</u>	<u>0.453 (mW/cm²)</u>

CDMA Modem Operating in the 1900MHz PCS Band:

900MHz LAN:	0.114 (mW/cm ²)
2.4GHz Zigbee:	0.007 (mW/cm ²)
CDMA 1900:	0.382 (mW/cm ²)
<u>TOTAL:</u>	<u>0.503 (mW/cm²)</u>

Installation Guidelines:

The installation manual shall contain text similar to the following advising how to install the equipment to maintain compliance with the FCC RF exposure requirements:

“RF Exposure (Intentional Radiators Only)

In accordance with FCC requirements of human exposure to radiofrequency fields, the radiating element shall be installed such that a minimum separation distance of 20cm is maintained from the general population.”

Conclusion:

This device complies with the MPE requirements by providing adequate separation between the device, any radiating structure and the general population.