



Excellence in Compliance Testing

Certification Exhibit

**FCC ID: SK9ITR24001
IC: 864G-ITR24001**

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

ACS Report Number: 11-0105.W06.11.A

**Manufacturer: Itron Electricity Metering, Inc.
Model: ITR24001**

RF Exposure

General Information:

Applicant: Itron Electricity Metering, Inc.
 ACS Project: 11-0105
 Device Category: Mobile
 Environment: General Population/Uncontrolled Exposure

Technical Information:

Antenna Type: WP Wireless P/N: WPANT30005-SA, 2.4 GHz Omni Directional Whip
 Maximum Antenna Gain: 3.9dBi
 Maximum Transmitter Conducted Power: 22.40dBm, 173.8mW
 Maximum System EIRP: 26.30dBm, 426.6mW

MPE Calculation – Standalone Configuration

The Power Density (mW/cm²) is calculated as follows:

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

Where:

- S = power density (in appropriate units, e.g. mW/cm²)
- 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)

Table 1.1: MPE Calculation – Standalone Configuration

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)
2437	22.4	1.00	173.78	3.9	2.455	20	0.085

MPE Calculation – Collocated Configuration (Itron Prism Cell Relay)

The Power Density (mW/cm²) is calculated as follows:

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

Where:

S = power density (in appropriate units, e.g. mW/cm²)

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)

Technical Information:**Table 1.2: Technical Information – Collocated Configuration (Itron Prism Cell Relay)**

	900 MHz LAN FCC ID: SK9ITR9002 IC:864G-ITR9002	802.11b/g/n (EUT) FCC ID: SK9ITR24001 IC:864G-ITR24001	GSM / GPRS Modem FCC ID: N7NMC8790 IC:2417C-MC8790	CDMA Modem FCC ID: N7N-MC5728 IC:2417C-MC5728
Antenna Type	WP Wireless P/N: WPANT30003-CB Omni Directional Body-mount Antenna	WP Wireless P/N: WPANT30005-SA 2.4 GHz Omni Directional Whip	WP Wireless P/N: WPANT30002-SB Omni Directional Body-mount	WP Wireless P/N: WPANT30002-SB Omni Directional Body-mount
Antenna Gain	1.8 dBi	3.9 dBi	850 Band: 2.3 dBi 1900 Band: 3.8 dBi	850 Band: 2.3 dBi 1900 Band: 3.8 dBi
Conducted Power	27.98dBm	173.8dBm	850 Band: 31.8dBm 1900 Band: 28.7dBm	850 Band: 25.07dBm 1900 Band: 24.90dBm
Maximum PK EIRP	950.6 mW	426.6 mW	GSM 850: 2.57 W 1900 Band: 1.78 W	850 Band: 0.546 W 1900 Band: 0.741 W
Maximum PK ERP	579.4 mW	260.0 mW	GSM 850: 1.57 W 1900 Band: 1.08 W	850 Band: 0.333 W 1900 Band: 0.452 W

Note: Power provided for CDMA Modem FCC ID: N7N-MC5728 / IC: 2417C-MC5728 is average power as provided in certification filing for determining MPE compliance.

Source Based Time Averaging GSM / GPRS Modem - FCC ID: N7NMC8790 / IC:2417C-MC8790

The GSM / GPRS Modem FCC ID: N7NMC8790 / IC: 2417C-MC8790 is a Class 12 modem with a 50% source-based time-averaged duty cycle. The measured power level was reduced by a factor 3dB to account for the duty cycle. The duty cycle correction factor is determined using the formula: 10log (0.50) = 3dB.

Corrected Level 850 = 31.8 – 3.0 = 28.8dBm

Corrected Level 1900 = 28.7 – 3.0 = 25.7dBm

Table 1.3: MPE Calculation – Collocated Configuration (Itron Prism Cell Relay)

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)
914.75	27.98	0.61	628.06	1.8	1.514	20	0.189
2437	22.4	1.00	173.78	3.9	2.455	20	0.085
824 (GPRS)	28.8	0.55	758.58	2.3	1.698	20	0.256
1850 (GPRS)	25.7	1.00	371.54	3.8	2.399	20	0.177
824 (CDMA)	25.07	0.55	321.37	2.3	1.698	20	0.109
1850 (CDMA)	24.9	1.00	309.03	3.8	2.399	20	0.147

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 limit utilized is the lower limit specified for all simultaneous transmitters. The limit used to show compliance to the 20cm separation distance is 0.55mW/cm².

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

GSM / GPRS Modem Operating in the 800MHz Cellular Band:

900MHz LAN:	0.189 (mW/cm ²)
802.11b/g/n:	0.085 (mW/cm ²)
GSM 850:	0.256 (mW/cm ²)
TOTAL:	<u>0.530 (mW/cm²)</u>

GSM / GPRS Modem Operating in the 1900MHz PCS Band:

900MHz LAN:	0.189 (mW/cm ²)
802.11b/g/n:	0.085 (mW/cm ²)
GSM 1900:	0.177 (mW/cm ²)
TOTAL:	<u>0.451 (mW/cm²)</u>

CDMA Modem Operating in the 800MHz Cellular Band:

900MHz LAN:	0.189 (mW/cm ²)
802.11b/g/n:	0.085 (mW/cm ²)
CDMA 850:	0.109 (mW/cm ²)
TOTAL:	<u>0.383 (mW/cm²)</u>

CDMA Modem Operating in the 1900MHz PCS Band:

900MHz LAN:	0.189 (mW/cm ²)
802.11b/g/n:	0.085 (mW/cm ²)
CDMA 1900:	0.147 (mW/cm ²)
TOTAL:	<u>0.421 (mW/cm²)</u>

Installation Guidelines

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

RF Exposure

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 20 centimeters will be maintained.