Excellence in Compliance Testing

Certification Exhibit

FCC ID: SK9M2LG1
IC: 864G-M2LG1

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

ACS Report Number: 10-0260

Manufacturer: Itron Electricity Metering, Inc.
Model: M2 Gateway

RF Exposure

General Information:

Applicant:	Itron Electricity Metering, Inc.
ACS Project:	10-0260
Device Category:	Mobile
Environment:	General Population/Uncontrolled Exposure
Simultaneous Transmission:	Yes

Technical Information 900 MHz LAN Radio

Antenna Type: Quarter Wave Embedded Slot Antenna
Antenna Gain: 2.2dBi
Transmitter Conducted Power: 23.61dBm
Maximum System EIRP: 25.81dBm (381mW)

Technical Information 802.15.4 Zigbee Radio

Antenna Type: Quarter Wave Embedded Slot Antenna
Antenna Gain: 3.8dBi
Transmitter Conducted Power: 15.50dBm
Maximum System EIRP: 19.30dBm (85mW)

MPE Calculation

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/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)

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	23.61	0.60	229.61	2.2	1.660	20	0.076
2475	15.5	1.00	35.48	3.8	2.399	20	0.017

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 900 MHz LAN and 2.4GHz Zigbee radio can operate simultaneously there it is appropriate to include both of those power density values in the summation of power densities.

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

900MHz LAN:	0.076 (mW/cm^2)
2.4GHz Zigbee:	0.017 (mW/cm^2)
TOTAL:	**0.093 (mW/cm^2)**

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.

Conclusion

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