Excellence in Compliance Testing

Certification Exhibit

FCC ID: QHC-010201A

FCC Rule Part: 15.247

ACS Project Number: 12-0330

Manufacturer: Itron Inc.
Model: I210-AMP

RF Exposure

General Information:

Applicant: Itron Inc.
Device Category: Mobile
Environment: General Population/Uncontrolled Exposure

The I210-AMP FCC ID: QHC-010201A is designed to be integrated into 1S, 2S, 3S, 4S and 25S electric utility meter forms and be collocated and transmit simultaneously with Sierra Wireless CDMA modem SL5011, FCC ID: N7NSL5011.

Technical Information:

Table 1: Technical Information

	802.15.4 (Zigbee) ***FCC ID: QHC-010201A***	**Sierra Wireless CDMA modem Model SL5011 FCC ID: N7NSL5011**
Antenna Type	Printed Inverted F	Dual Band Flexible Slot
Antenna Gain	3.3 dBi	850 Band: 2.2 dBi 1900 Band: 3.0 dBi
Conducted Power	97.05 mW	850 Band: 748.17 mW* 1900 Band: 767.36 mW*
Maximum Peak EIRP	207.49 mW	850 Band: 1241.65 mW 1900 Band: 1531.09 mW
Maximum Peak ERP	126.47 mW	850 Band: 756.83 mW 1900 Band: 933.25 mW

* Power provided for FCC ID: N7NSL5011 is power as listed on the grant and measured in the original FCC certification filing.

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)

Table 2: MPE Calculation

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)**
2475	19.87	1.00	97.05	3.3	2.138	20	0.041
824.7	28.74	0.55	748.17	2.2	1.660	20	0.247
1880	28.85	1.00	767.36	3	1.995	20	0.305

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 MPE ratios. The limit is such that the summation of MPE ratios is ≤ 1.0.

The summation of MPE ratios is as follows:

SL5011 Modem Operating in the 850 Band:
802.15.4 MPE Ratio + SL5011 850 MPE Ratio
(0.041 / 1.0) + (0.247 / 0.55) = (0.041) + (0.449) = 0.490
0.490 < 1

SL5011 Modem Operating in the 1900 PCS Band:
802.15.4 MPE Ratio + SL5011 1900 MPE Ratio
(0.041 / 1.0) + (0.305 / 1.0) = (0.041) + (0.305) = 0.346
0.346 < 1

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.