Certification Exhibit

Contains FCC ID: SK9WF111, SK9ITR9002, SK9NIC, SK9ITR24, N7NEM7455

FCC Rule Part: 47 CFR Part 2.1091

Project Number: 72154075

Manufacturer: Itron, Inc.
Model: NIC

RF Exposure

General Information:

Applicant: Itron, Inc.
Device Category: Fixed
Environment: General Population/Uncontrolled Exposure
Exposure Conditions: Greater than 20 centimeters

Technical Information: SK9ITR9002

Antenna Type: External PCB
Antenna Gain: 1.0dBi
Maximum Transmitter Conducted Power: 27 dBm, 501.19 mW
Maximum EIRP: 28.0 dBm, 630.96 mW

Technical Information: SK9NIC

Antenna Type: External PCB
Antenna Gain: 2.04dBi
Maximum Transmitter Conducted Power: 27.0 dBm, 501.19 mW
Maximum EIRP: 29.04 dBm, 801.68 mW
Note: Conducted output power reduced from original certification in order to meet the 1W aggregate power limit for two co-located 900MHz radios.

Technical Information: SK9WF111

Antenna Type: Monopole (Taoglas, P/N GW26.0112)
Antenna Gain: 1.8dBi
Maximum Transmitter Conducted Power: 19.15 dBm, 82.22 mW
Maximum System EIRP: 20.95dBm, 124.45 mW

Technical Information – Zigbee Radio (FCC ID: SK9ITR24):

Antenna Type: PCB quarter wave embedded slot antenna
Max Antenna Gain: 3.8dBi
Maximum Transmitter Conducted Power: 18.03dBm, 63.53mW
Maximum System EIRP: 21.83dBm, 152.41mW

Technical Information – Cellular Radio (FCC ID: N7NEM7455):

Antenna Type: External PCB

LTE Band 2 (1850-1910MHz)
Antenna Gain: 2.56dBi
Maximum Transmitter Conducted Power: 24 dBm, 251.19 mW
Maximum EIRP: 26.56 dBm, 452.90 mW

LTE Band 4 (1710-1755MHz)
Antenna Gain: 0.15dBi
Maximum Transmitter Conducted Power: 24 dBm, 251.19 mW
Maximum EIRP: 24.15 dBm, 260.02 mW

LTE Band 5 (824-849MHz)
Antenna Gain: -3.43dBi
Maximum Transmitter Conducted Power: 24 dBm, 251.19 mW
Maximum EIRP: 20.57 dBm, 114.02 mW

LTE Band 12 (699-716MHz)
Antenna Gain: -2.43dBi
Maximum Transmitter Conducted Power: 24 dBm, 251.19 mW
Maximum EIRP: 21.57 dBm, 143.55 mW

LTE Band 13 (777-787MHz)
Antenna Gain: -2.08dBi
Maximum Transmitter Conducted Power: 24 dBm, 251.19 mW
Maximum EIRP: 21.92 dBm, 155.60 mW

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 1: MPE Calculation

Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/cm^2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
2412	19.15	1.00	82.22	1.8	1.514	20	0.0248
902.4	27	0.60	501.19	1	1.259	20	0.126
902.4	27	0.60	501.19	2.04	1.600	20	0.159
2475	18.03	1.00	63.53	3.8	2.399	20	0.030
1850	24	1.00	251.19	2.56	1.803	20	0.090
1710	24	1.00	251.19	0.15	1.035	20	0.0517
824	24	0.55	251.19	-3.43	0.454	20	0.023
699	24	0.47	251.19	-2.43	0.571	20	0.029
777	24	0.52	251.19	-2.08	0.619	20	0.031

Table 2: Simultaneous Transmissions Calculations

Technology	Transmit Frequency (MHz)	Power Density Limit (mW/cm^2)	Power Density (mW/cm^2)	MPE Ratio to Limit (%)	Sum of MPE Ratios (%)	Limit (%)
LTE B2	1850	1.00	0.090	9.01%	61.89%	100
WLAN	2412	1.00	0.0248	2.48%		
Sub-GHz 1	902.4	0.60	0.126	20.87%		
Sub-GHz 2	902.4	0.60	0.159	26.51%		
Zigbee	2475	1.00	0.030	3.03%		
LTE B4	1710	1.00	0.0517	5.17%	58.06%	100
WLAN	2412	1.00	0.0248	2.48%		
Sub-GHz 1	902.4	0.60	0.126	20.87%		
Sub-GHz 2	902.4	0.60	0.159	26.51%		
Zigbee	2475	1.00	0.030	3.03%		
LTE B5	824	0.55	0.023	4.13%	57.01%	100
WLAN	2412	1.00	0.0248	2.48%		
Sub-GHz 1	902.4	0.60	0.126	20.87%		
Sub-GHz 2	902.4	0.60	0.159	26.51%		
Zigbee	2475	1.00	0.030	3.03%		
LTE B12	699	0.47	0.029	6.13%	59.01%	100
WLAN	2412	1.00	0.0248	2.48%		
Sub-GHz 1	902.4	0.60	0.126	20.87%		
Sub-GHz 2	902.4	0.60	0.159	26.51%		
Zigbee	2475	1.00	0.030	3.03%		
LTE B13	777	0.52	0.031	5.98%	58.86%	100
WLAN	2412	1.00	0.0248	2.48%		
Sub-GHz 1	902.4	0.60	0.126	20.87%		
Sub-GHz 2	902.4	0.60	0.159	26.51%		
Zigbee	2475	1.00	0.030	3.03%		