

Certification Exhibit

FCC ID: QHC-OW35PE

FCC Rule Part: 15.247

ACS Project Number(s): 15-0132, 15-0267

Manufacturer: Itron, Inc.
Model: 574161

RF Exposure

General Information:

Applicant: Itron Inc.
 Device Category: Mobile
 Environment: General Population/Uncontrolled Exposure
Required Separation Distance: 20 cm

The Itron 574161 is designed to be integrated into various electric utility meter forms and be collocated and transmit simultaneously with the on-board Sierra Wireless LTE modem HL7518 (FCC ID: N7NHL7518) or Sierra Wireless LTE modem HL7548 (FCC ID: N7NHL7548) and separate Itron module ITR24 (FCC ID: SK9ITR24).

Technical Information:**Table 1: Technical Information (Including Collocated Transmitters On Board / In Host)**

	Itron LAN module 900 MHz Model 574161 FCC ID: QHC-OW35PE (EUT)	Itron Zigbee module 2.4 GHz Model ITR24 FCC ID: SK9ITR24	Sierra Wireless LTE modem Bands 13, 4 Model HL7518 FCC ID: N7NHL7518	Sierra Wireless LTE modem Bands 17, 5, 4, 2 Model HL7548 FCC ID: N7NHL7548
Antenna Type	Taoglas PC91.07.0100A.db 915MHz PCB	PCB quarter wave embedded slot	Taoglas FXUB66 flexible ultra wideband	Taoglas FXUB66 flexible ultra wideband
Antenna Gain	2.7dBi	3.8 dBi	Band 13 (777 - 787MHz): 2.7 dBi Band 4 (1710 – 1755 MHz): 5.0 dBi	Band 17 (704 – 716 MHz): 2.7 dBi Band 5 (824 - 849MHz): 2.7 dBi Band 4 (1710 – 1755 MHz): 5.0 dBi Band 2 (1850 – 1910 MHz): 5.0 dBi
Conducted Power	133 mW	64 mW	Band 13 (777 - 787MHz): 201 mW* Band 4 (1710 – 1755 MHz): 211 mW*	Band 17 (704 – 716 MHz): 190 mW Band 5 (824 - 849MHz): 180 mW Band 4 (1710 – 1755 MHz): 201 mW Band 2 (1850 – 1910 MHz): 214 mW
Maximum EIRP	248 mW	152 mW	Band 13 (777 - 787MHz): 375 mW Band 4 (1710 – 1755 MHz): 667 mW	Band 17 (704 – 716 MHz): 353 mW Band 5 (824 - 849MHz): 334 mW Band 4 (1710 – 1755 MHz): 653 mW Band 2 (1850 – 1910 MHz): 678 mW
Maximum ERP	151 mW	93 mW	Band 13 (777 - 787MHz): 253.04 mW Band 4 (1710 – 1755 MHz): 265.63 mW	Band 17 (704 – 716 MHz): 215 mW Band 5 (824 - 849MHz): 204 mW Band 4 (1710 – 1755 MHz): 387 mW Band 2 (1850 – 1910 MHz): 413 mW

* Power provided for Sierra Wireless HL7518 and HL7548 modems is power as listed on the FCC grant and measured in the original certification filing.

MPE Calculation

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 2: MPE Calculation (Including Collocated Devices - Sierra Wireless LTE modem HL7518)

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)	Radio
917	21.25	0.61	133.35	2.7	1.862	20	0.049	A
2475	18.03	1.00	63.53	3.8	2.399	20	0.030	B
784.5	23.04	0.52	201.37	2.7	1.862	20	0.075	C
1717.5	23.24	1.00	210.86	5	3.162	20	0.133	D

Summation of MPE Ratios – Simultaneous Transmissions

This device contains multiple transmitters which can operate simultaneously and is collocated with additional transmitters in host integration; therefore MPE compliance is determined by the summation of MPE ratios. The limit is such that the summation of MPE ratios is ≤ 1.0.

Table 3: Summation of MPE Ratios

	Scenario 1	Scenario 2
Radio A (900 MHz LAN)	x	x
Radio B (2.4 GHz Zigbee)	x	x
Radio C (LTE Band 13)	x	
Radio D (LTE Band 4)		x
Radio A MPE Ratio	0.08	0.08
Radio B MPE Ratio	0.03	0.03
Radio C MPE Ratio	0.14	
Radio D MPE Ratio		0.13
MPE Ratio Summation:	0.25	0.24

Table 4: MPE Calculation (Including Collocated Devices - Sierra Wireless LTE modem HL7548)

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)	Radio
917	21.25	0.61	133.35	2.7	1.862	20	0.049	A
2475	18.03	1.00	63.53	3.8	2.399	20	0.030	B
710	22.78	0.47	189.67	2.7	1.862	20	0.070	C
829	22.54	0.55	179.47	2.7	1.862	20	0.066	D
1745	23.03	1.00	200.91	5	3.162	20	0.126	E
1905	23.31	1.00	214.29	5	3.162	20	0.135	F

Summation of MPE ratios – Simultaneous Transmissions

This device contains multiple transmitters which can operate simultaneously and is collocated with additional transmitters in host integration; 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 .

Table 5: Summation of MPE Ratios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Radio A (900 MHz LAN)	x	x	x	x
Radio B (2.4 GHz Zigbee)	x	x	x	x
Radio C (LTE Band 17)	x			
Radio D (LTE Band 5)		x		
Radio E (LTE Band 4)			x	
Radio F (LTE Band 2)				x
Radio A MPE Ratio	0.08	0.08	0.08	0.08
Radio B MPE Ratio	0.03	0.03	0.03	0.03
Radio C MPE Ratio	0.15			
Radio D MPE Ratio		0.12		
Radio E MPE Ratio			0.13	
Radio F MPE Ratio				0.13
MPE Ratio Summation:	0.26	0.23	0.24	0.25