



Certification Exhibit

FCC ID: QZC-GNIC

FCC Rule Part: 47 CFR Part 2.1091

Project Number: 72181647

Manufacturer: Elster Solutions LLC Honeywell International Company
Module Model Name: GNIC

RF Exposure

General Information:

Applicant: Elster Solutions LLC Honeywell International Company
 Device Category: Mobile
 Environment: General Population/Uncontrolled Exposure

This evaluation addresses the Elster Solutions LLC Honeywell International Company 900 MHz GNIC module (FCC ID: QZC-GNIC) as integrated in the Elster Solutions LLC Honeywell International Company host electric meter model A4 with a collocated pre-approved Zigbee module (FCC ID: QOQ13). Both 900 MHz and Zigbee modules can operate simultaneously, therefore RF Exposure test exemption for simultaneous transmission is evaluated.

Technical Information (900 MHz) – “Device 1”:

Frequency Range (MHz): 902.3 – 927.8
 Antenna Type: Stamped Metal dipole
 Antenna Gains: 2.1 dBi
 Maximum Transmitter Conducted Power: 29.78dBm, 950.60mW
 Maximum System EIRP: 31.88dBm, 1541.70mW
 Exposure Conditions: 20 centimeters

Technical Information (Zigbee) – “Device 2”:

Frequency Range (MHz): 2405 - 2480
 Antenna Type: Integrated Chip Antenna
 Antenna Gains: 1.6 dBi
 Maximum Transmitter Conducted Power: 18.38dBm, 68.87mW
 Maximum System EIRP: 19.98dBm, 99.54mW
 Exposure Conditions: 20 centimeters

RF Exposure Calculation**Table 1: Device Characteristics**

Technical Parameters	Device 1	Device 2
Frequency Range (GHz)	0.9023 – 0.9278	2.405 – 2.480
Frequency Range (MHz)	902.3 – 927.8	2405 - 2480
Separation Distance (cm)	20.00	20.0
Separation Distance (m)	0.2000	0.200
Antenna Gain (dBi)	2.10	1.60
ERP Easily Determined	YES	YES
Conducted Power (dBm)	29.78	18.38
Conducted Power (mW)	950.60	68.87
Duty Factor (Source-Based) %	100.0	100.0
Maximum (Source-Based) Time-Averaged Conducted Power (mW)	950.60	68.87
Maximum (Source-Based) Time-Averaged ERP (mW)	940.06	60.70
Maximum (Source-Based) Time-Averaged EIRP (mW)	1541.70	99.54
Maximum Output (mW)	950.60	68.87

Test Exemption Criteria

Test exemption is determined by 47 CFR 1.1307(b)(3)(i)(B) where single RF source is exempt if:

The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Table 2: 47 CFR 1.1307(b)(3)(i)(B) SAR – Based Exemption P_{th} (mW)

Technical Parameters	Device 1	Device 2
x	1.48	1.90
ERP _{20cm} (mW)	1892.10	3060.00
Maximum Output (mW)	950.605	68.865
P _{th} (mW)	1892.100	3060.000
Exemption	YES	YES

Table 3: 47 CFR 1.1307(b)(3)(i)(B) Simultaneous Transmission Determination of Exemption – SAR-Based Exemption Pth (mW)

Technical Parameters	Device 1	Device 2
Maximum Output (mW)	950.605	68.865
P_{th} (mW)	1892.100	3060.000
Exemption	YES	YES
Contribution Ratio (P / P_{th})	0.502	0.023

Table 4: Summation of Contributions From SAR-Based Exemptions

	Device 1	Device 2
Used Contribution Ratio (P / P_{th})	0.502	0.023
Summation of Contribution Ratios (P / P_{th})	0.525	