# REGULATORY COMPLIANCE REPORT

**TITLE:** FCC & IC Test Report for MPE
Telemetry FCC ID: EWQ100GTHONA IC: 864D-100GTHONA IC Model: HONA
**AUTHOR:** Mark Kvamme

| REV | CCO | DESCRIPTION OF CHANGE | DATE | APPROVALS | |
|---|---|---|---|---|---|
| 001 | | INITIAL RELEASE | | Engineering | |
| | | | | Regulatory | |

## REVISION HISTORY

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| a | | initial upload | 21jul13 | Engineering | |
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Test Data Summary
**FCC 15.247 / IC RSS-210; Frequency Hopping Transmitter;**
100GTHONA – Honeywell, 903MHz – 926.85 MHz for EUT
**FCC ID:** EWQ100GTHONA **IC:** 864D-100GTHONA **IC Device Models:** HONA
Serial Numbers 31,30,5
**OATS Registration Number:** FCC 90716, IC 864D-1

| Rule | Description | Spec Limit | Max. Reading | Pass/ Fail |
|---|---|---|---|---|
| Parts 1.1310 & 2.1091(mobile) or 2.1093 (portable) / RSS-102 Sec 4.2-Canada Safety Code 6; Table 5 | Limits for Maximum Permissible Exposure (MPE) | formula | **Power level 1** = 0.0023 mW / $cm^2$ @ 20 cm = 0.023 *W/M*$^2$ @ 0.2 M **Power level 2** = 0.0482 mW / $cm^2$ @ 20 cm = 0.482 *W/M*$^2$ @ 0.2 M **Power level 3** **= 0.0801 mW/$cm^2$ @ 20 cm** **= 0.801*W/M*$^2$ @ 0.2 M** | Pass |

*Rule versions: FCC Part 1; FCC Part 2; FCC Part 15, RSS-102 Issue 4 (03-2010); RSS-210 Issue 8 (12-2010); RSS-Gen Issue 3 (12-2010).*
*Reference docs: ANSI C63.4-2003; DA 00-705 (03-30-2000); OET65 (08-1997); OET65C (06-2001); IEEE C95.3-2002.*

**Cognizant Personnel**

| Name | Title |
|---|---|
| Mark Kvamme | Test Technician |
| Jay Holcomb | Regulatory Manager |
| Johann De Jager | Project Lead |

**CONDITIONS DURING TESTING**

No Modifications to the EUT were necessary during the testing.

**FCC 15.31(m) – IC _n/a_; Number of Channels**
This device was tested on three channels.

**ANSI C63.4 - Temperature and Humidity During Testing**
The temperature during testing was within +10º C and +40º C.
The Relative humidity was between 10% and 90%.
RSS-Gen 4.3 (g): Tests shall be performed at ambient temperature

**EQUIPMENT UNDER TEST (EUT) DESCRIPTION**
Itron declares that the EUT tested was representative of a production unit.

**EQUIPMENT UNDER TEST**

**EUT Module**

| | |
|---|---|
| Manuf: | Itron, Inc. |
| Itron p/n: | TEL-1000-002 |
| Serial Number(s) | Listed Below |
| Power source | Fresh Batteries were used |

**Plot Information**
In the zero span measurements, the line in the display is the trigger level.

**Peripheral Devices**
None

1.1310 & 2.1091(mobile) or 2.1093(portable) / RSS-102 Sec 4.2-Canada Safety Code 6; Table 5

**Maximum Permissible Exposure (MPE)**

*Radiofrequency radiation exposure limits. - The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.*

*1.1307 (b) In addition to the actions listed in paragraph (a) of this section, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the preparation of an Environmental Assessment (EA) if the particular facility, operation or transmitter would cause human exposure to levels of radiofrequency radiation in excess of the limits in §§1.1310 and 2.1093 of this chapter.*

| Power level | Frequency (Mhz) | unit 5 Field strength (dBuV/m) | EIRP (dbm) | unit 30 conducted power (dbm) | conducted power (watts) | antenna gain (dbi) | antenna gain numeric |
|---|---|---|---|---|---|---|---|
| 3 | 926.8 | 120.042 | 26.042 | **23.98** | 0.25 | 2.062 | 1.61 |
| 2 | 926.8 | 117.852 | 23.852 | 19.79 | 0.0953 | 4.062 | 2.54 |
| 1 | 915 | 104.016 | 10.016 | 5.33 | 0.004 | 4.686 | 2.94 |

Determine the maximum power density for the general / uncontrolled population minimum separation distance of 20 cm. ($f_{MHz}$ / 1500 mW/cm$^2$ == $f_{MHz}$ / 150 W/M$^2$)

| Frequency (Mhz) | FCC Limits: (mW / cm2 @ 20cm) | IC Limits: (W / M2 @ 0.2M) |
|---|---|---|
| 903 | 0.602 | 6.020 |
| 915 | 0.610 | 6.100 |
| 926.8 | 0.618 | 6.179 |

The power density is calculated as:

$P_d$ = power density in *mW/cm$^2$*

$P_t$ = transmit power in milliwatts

$$P_d = \frac{P_t \times G}{4 \times \pi \times r^2}$$

G = numeric antenna gain
r = distance between body and transmitter in centimeters.

Power level 3
Max antenna gain = 2.062 dBi = 1.61 numeric
Max TX power = 23.91 dBm = 246 milliwatts
results: $P_D$ = (250 x 1.61) / ( 4 x pi x 20cm$^2$) = 0.0801 mW / cm$^2$ @ 20 cm
W/m2 = 10 times mW/cm$^2$ = 0.801*W/M$^2$* @ 0.2 M

Power level 2
Max antenna gain = 4.062 dBi = 2.54 numeric
Max TX power = 19.79 dBm = 0.0953 milliwatts
results: $P_D$ = (95.3 x 2.54) / ( 4 x pi x 20cm$^2$) = 0.0482 mW / cm$^2$ @ 20 cm
W/m2 = 10 times mW/cm$^2$ = 0.482*W/M$^2$* @ 0.2 M

Power level 1
Max antenna gain = 4.686 dBi = 2.94 numeric
Max TX power = 5.33 dBm = 4 milliwatts
results: $P_D$ = (4 x 2.94) / ( 4 x pi x 20cm$^2$) = 0.0023 mW / cm$^2$ @ 20 cm
W/m2 = 10 times mW/cm$^2$ = 0.023 *W/M$^2$* @ 0.2 M