REGULATORY COMPLIANCE REPORT

TITLE: FCC & IC Test Report for 15.247 & RSS-210 Frequency Hopping Device
100T COMMUNICATION MODULE-CATHODIC PROTECTION

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

REVISION HISTORY

a		initial upload	07dec12	Engineering	
				Regulatory	
b		update RBW	03jan13	Engineering	
				Regulatory	
				Engineering	
				Regulatory	

Test Data Summary

FCC 15.247 / IC RSS-210; Frequency Hopping Transmitter; 100TCP
100T COMMUNICATION MODULE-CATHODIC PROTECTION, 903MHz – 926.85 MHz for EUT
FCC ID/ IC: EWQ100TCP/ 864D-100TCP IC Device Models : CP
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	Limits for Maximum Permissible Exposure (MPE)	formula	0.169 mW / cm^2 @ 20 cm 1.69 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
Name	Title
Jay Holcomb	Regulatory Manager
Name	Title
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: 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 Model:	100TCP
Itron p/n:	TEL-1000-003
Serial Number(s)	1129328690,1129328697,1129328699
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	1129328690 Field strength (dBuV/m)	EIRP (dbm)	1129328697 conducted power (dbm)	conducted power (watts)	antenna gain (dbi)	antenna gain numeric
3	123.29	29.29	22.47	0.177	6.82	4.81
2	121.27	27.27	21.78	0.151	5.49	3.54
1	108.82	14.82	9.00	0.008	5.82	**3.82**

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)

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.

FCC Limits: 926.8MHz / 1500 = 0.618 mW / cm^2 @ 20cm

IC Limits: 926.8MHz / 150 = 6.18 W / M^2 (@ 0.2M)

Power level 3

Max antenna gain = 6.82 dBi = 4.81 numeric

Max TX power = 22.47 dBm = 177 milliwatts

results: P_D = (177 x 4.81) / (4 x pi x 20cm^2) = **0.169 mW / cm^2 @ 20 cm**

W/m2 = 10 times mW/cm^2 **= 1.69 *W/M^2* @ 0.2 M**

Power level 2

Max antenna gain = 5.49 dBi = 3.54 numeric

Max TX power = 21.78 dBm = 151 milliwatts

results: P_D = (151 x 3.54) / (4 x pi x 20cm^2) = 0.106 mW / cm^2 @ 20 cm

W/m2 = 10 times mW/cm^2 = 1.06 *W/M^2* @ 0.2 M

Power level 1

Max antenna gain = 5.82 dBi = 3.82 numeric

Max TX power = 9.00 dBm = 8 milliwatts

results: P_D = (8 x 3.82) / (4 x pi x 20cm^2) = 0.006 mW / cm^2 @ 20 cm

W/m2 = 10 times mW/cm^2 = 0.06 *W/M^2* @ 0.2 M