

REGULATORY COMPLIANCE REPORT

TITLE: FCC & IC MPE Report for 15.247 & RSS-210 Frequency Hopping Device

Commercial FCC ID: EWQ100GDLCS IC: 864D-100GDLCS

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

REVISION HISTORY

A				Engineering	
				Regulatory	
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				Engineering	
				Regulatory	

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Test Data Summary

FCC 15.247 / IC RSS-210; Frequency Hopping Transmitter;

100GDLS – Commercial, 902.3 MHz – 926.8 MHz for EUT

FCC ID: EWQ100GDLCS IC: 864D-100GDLCS IC Device Models (for IC): 5S,6S

Part Numbers: ERG-5006-007/008 Serial Numbers 105,101,18

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	0.407 mW / cm ² @ 20 cm 4.07 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	
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CONDITIONS DURING TESTING

No Modifications to the EUT were necessary during the testing.

ANSI C63.4 - Temperature and Humidity During Testing

The temperature during testing was within +10° C and +40° 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 p/n: ERG-5006-007/008
Serial Number(s) Listed Below
Power source Fresh Batteries

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	unit 101 Field strength (dBuV/m)	EIRP (dBm)	unit 105 conducted power (dBm)	conducted power (watts)	antenna gain (dBi)	antenna gain numeric
3	127.11	33.11	25.66	0.368	7.45	5.56
2	123.88	29.88	21.76	0.150	8.12	6.49
1	108.01	14.01	6.09	0.004	7.92	6.19

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

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 = 7.45 dBi = 5.56 numeric

Max TX power = 25.66 dBm = 368 milliwatts

results: $P_D = (368 \times 5.56) / (4 \times \pi \times 20\text{cm}^2) = 0.407 \text{ mW} / \text{cm}^2$ @ 20 cm
 $\text{W/m}^2 = 10 \text{ times mW/cm}^2 = 4.07 \text{ W/M}^2$ @ 0.2 M

Power level 2

Max antenna gain = 8.12 dBi = 6.49 numeric

Max TX power = 21.76 dBm = 150 milliwatts

results: $P_D = (150 \times 6.49) / (4 \times \pi \times 20\text{cm}^2) = 0.194 \text{ mW} / \text{cm}^2$ @ 20 cm
 $\text{W/m}^2 = 10 \text{ times mW/cm}^2 = 1.94 \text{ W/M}^2$ @ 0.2 M

Power level 1

Max antenna gain = 7.92 dBi = 6.19 numeric

Max TX power = 6.09 dBm = 4 milliwatts

results: $P_D = (4 \times 6.19) / (4 \times \pi \times 20\text{cm}^2) = 0.005 \text{ mW} / \text{cm}^2$ @ 20 cm
 $\text{W/m}^2 = 10 \text{ times mW/cm}^2 = 0.05 \text{ W/M}^2$ @ 0.2 M