

REGULATORY COMPLIANCE REPORT

TITLE: FCC MPE Test Report for 15.247 Frequency Hopping Device

EWQ100TMS - Methane Detector

AUTHOR: Mark Kvamme

REV	ССО	DESCRIPTION OF CHANGE	DATE	<u>APPROVALS</u>	
001		INITIAL RELEASE		Engineering	
				Regulatory	

REVISION HISTORY

А	initial upload	25apr12	Engineering	
			Regulatory	
			Engineering	
			Regulatory	
			Engineering	
			Regulatory	

NOTICE OF PROPRIETARY INFORMATION

Information contained herein is proprietary and is property of **ITRON**, **Inc**. where furnished with a proposal, the recipient shall use it solely to evaluate the proposal. Where furnished to a customer it shall be used solely for the purposes of inspection, installation or maintenance. Where furnished to a supplier, it shall be used solely in the performance of work contracted for this company. The information shall not be used or disclosed by the recipient for any other purpose, whatsoever.

100tms_MPE.docx Rev. a



1.1310 & 2.1091(mobile) or 2.1093(portable)

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.

unit 39399890 Field strength (dbuV/m)	EIRP (dbm)	unit 9081 conducted power (dbm)	conducted power (watts)	antenna gain (dbi)	antenna gain numeric
117.380	23.380	20.500	0.112	2.880	1.941
105.260	11.260	4.400	0.003	6.860	4.853

Determine the maximum power density for the general / uncontrolled population minimum separation distance of 20 cm. (f_{MHz} / 1500 mW/cm² == f_{MHz} / 150 W/M²) 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: $926.8 \text{MHz} / 1500 = 0.618 \text{ mW} / \text{cm}^2 @ 20 \text{cm}$ IC Limits: $926.8 \text{MHz} / 150 = 6.18 \text{ W} / \text{M}^2 (@ 0.2 \text{M})$

Power level 3

Max antenna gain = 2.88 dBi = 1.941 numeric Max TX power = 20.50 dBm = 112 milliwatts

(140 × 4 044) / (4 × n) ×

 $P_D = (112 \times 1.941) / (4 \times pi \times 20cm^2) = 0.043 \text{ mW} / cm^2 @ 20 \text{ cm}$ $W/m2 = 10 \text{ times mW/cm}^2 = 0.432 \text{ W/M}^2 @ 0.2 \text{ M}$

Power level 1

Max antenna gain = 6.86 dBi = 4.853 numeric

Max TX power = 4.4 dBm = 3 milliwatts

results: $P_D = (3 \times 4.853) / (4 \times pi \times 20cm^2) = 0.003 \text{ mW} / cm^2 @ 20 \text{ cm}$

 $W/m^2 = 10 \text{ times mW/cm}^2 = 0.029 W/M^2 @ 0.2 M$

100tms_MPE.docx Rev. a