# REGULATORY COMPLIANCE REPORT

**TITLE:** FCC MPE Test Report for 15.247 Frequency Hopping Device
EWQ100TMS – Methane Detector
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| REV | CCO | DESCRIPTION OF CHANGE | DATE | APPROVALS | |
|---|---|---|---|---|---|
| 001 | | INITIAL RELEASE | | Engineering | |
| | | | | Regulatory | |

## REVISION HISTORY

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| A | | initial upload | 25apr12 | Engineering | |
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## *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/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 = 2.88 dBi = 1.941 numeric
Max TX power = 20.50 dBm = 112 milliwatts
results: $P_D$ = (112 x 1.941) / ( 4 x pi x 20cm$^2$) = 0.043 mW / cm$^2$ @ 20 cm
W/m2 = 10 times mW/cm$^2$ = 0.432 *W/M$^2$* @ 0.2 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 x 4.853) / ( 4 x pi x 20cm$^2$) = 0.003 mW / cm$^2$ @ 20 cm
W/m2 = 10 times mW/cm$^2$ = 0.029 *W/M$^2$* @ 0.2 M