

MPE CALCULATION AND RADIATION EXPOSURE RISK ASSESSMENT

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Model numbers: Aura 42 and Chroma 42

MPE Calculation

Prediction of MPE limit at a given distance

Equation from page 20 of OET Bulletin No 65, Edition 97-01

$$S = \frac{1.64ERP}{4\pi R^2} \text{ re-arranged } R = \sqrt{\frac{1.64ERP}{S4\pi}}$$

where:

S = power density

R = distance to the centre of radiation of the antenna

ERP = EUT Maximum power

With the maximum test case 100% duty cycle the MPE calculation result based on radiated field measurements from Aura 42 test report 14R406 FR (Max Result @ 927.5MHz = 86.76dBuV @ 3m = 0.087mW ERP)

Prediction frequency (MHz)	Max ERP (mW)	Power density limit (S) (mW/cm2)	Distance R cm required to be less than 0.6mW/cm2
927.5MHz	0.087	0.6	0.189

Exposure risk in normal operation

The maximum theoretical transmitter duty cycle in operation is 25ms every 17.6s, (0.14%) However, it must be noted that this is impossible to be sustained by the control system. The typical duty cycle of the transmitter is max pulse 25ms, 5 times a day. ie 0.00003%.

Aura 42 is a fixed installation. In a retail shelf edge context it is possible human body will contact the device, but with only momentary exposure (25ms max duration).

For Industry Canada RSS-102 requirements:-

Installation of the device when in service could be <20cm from any part of the user.

Therefore the electronic shelf labels Aura 42 and Chroma 42 fall under RSS-102 issue 4, section 2.5.1

The maximum EIRP must then be less than 200mW.

From Aura 42 test report 14R406FR

Maximum TX power = 86.76dBuV @ 3m @ 927.5MHz = 0.14mW EIRP
(0.087mW ERP)

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