

RADIOCOMMUNICATIONS EQUIPMENT
COMPLIANCE ASSESSMENT
FOR
FCC 47 CFR 1.1310
RADIOFREQUENCY RADIATION EXPOSURE LIMITS
MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Client:	Locata Corporation Pty Ltd
Address:	111 Canberra Avenue, Griffith ACT 2603, Australia
Report Number:	0515_ASY-010007-1_FCC(MPE) <i>[This report supersedes report 0304_ASY-010007-1_FCC(MPE)]</i>
Date of Assessment	19 to 28 Feb 2013
File Number:	LOC121022
Equipment Name:	LocataLite G4
Equipment Model No:	ASY-010007-1
Equipment Description:	Radio location transceiver (four transmitters operating on two 2.4GHz RF CH)
Result:	COMPLIES (General Population/Uncontrolled Exposure)
Assessed by:	Phillip Kane 
Approved by:	Colin Gan Senior Engineer 
Date of Issue:	15 May 2014

Results appearing herein relate only to the sample(s) assessed through the submitted test report(s).

This report is issued errors and omissions exempt and is subject to withdrawal at Austest Laboratories discretion.

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EQUIPMENT DETAILS	
MANUFACTURER:	Locata Corporation Pty Ltd
MODEL:	ASY-010007-1
OPERATING FREQUENCY:	TX1 mode: 2411MHz and 2473MHz TX2 mode: 2411MHz and 2462MHz
TRANSMITTER POWER INTO ANTENNA:	TX1 mode: 7dBm (5mW) TX2 mode: 24dBm (259mW)
TYPE OF ANTENNA:	Two external transmit antennas and one external receiver antenna. AeroAntenna Technology Inc. AT2400-2W-TNCM-008-00-05-L.
ANTENNA GAIN:	5dBi

FCC § 15.247(b) RF Exposure Criteria for Intentional Radiators:

RF Exposure Requirements: FCC §1.1307(b)(1) and §1.1307(b)(2):

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: FCC §1.1310:

As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

Maximum Permissible Exposure:

(As specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure)

<i>Frequency range (MHz)</i>	<i>Power density (mW/cm²)</i>
300 – 1500	f/1500
1,500 – 100000	1.0

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MPE Calculation:

The EUT was supplied with two identical transmitter antennas, each having a maximum antenna gain of 5dBi. WLAN and WWAN antennas are not considered co-located if they are more than 20cm apart. The client advised that the **antennas are separated by a distance of 1m**, therefore the transmitted signals are considered as separate (i.e. not co-located) for the purpose of the MPE calculations.

EUT's operating frequency range: 2411-2473 MHz
The worst case conducted power: **24dBm (259mW, peak)** (in TX2 mode)
Limit for Uncontrolled exposure: **1mW/cm² or 10 W/m²**

EUT maximum antenna gain: **5dBi (External) / 3.1623 numeric gain**

Equation from page 18 of OET 65, Edition 97-01:

$$S = PG / 4\pi R^2 \text{ or } R = \sqrt{PG / 4\pi S}$$

where, S = Power Density

P = Power Input to antenna (259mW)

G = Antenna Gain (3.1623)

R = distance to the centre of radiation of the antenna (20cm)

$$S = (259 \times 3.1623 / (4 \times 3.142 \times 20^2)) = (819.036 / 5026.548) = \mathbf{0.163 \text{ mW/cm}^2 \text{ @ 20cm separation}}$$

An advisory statement is to be included in the installation and user manual clearly indicating that adequate access restriction is necessary for the protection of the general public by ensuring that members of the public are kept at a minimum safety distance from the transmission point (generally referring to the transmit antenna or structure).

The above minimum safety distances are not valid for integral transmit antennas with higher antenna gains.

Austest Summary and Recommendations:

The equipment complies with FCC 47 CFR 1.1310: Limits for Maximum Permissible Exposure (MPE), Limits for General Population / Uncontrolled Exposure, when the indicated 20cm safety distance is adhered to.

If compliance is sought for model numbers other than those listed in the test report, then the compliance folder must hold additional documentation, demonstrating the equivalence of the products between the different model numbers.

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