RF Exposure Calculation

Applicant: LuxLabs Ltd. dba MeshNetics
FCC ID: U6T ZIGBIT-B0

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. End users may not be provided with the module installation instructions. OEM integrators and end users must be provided with transmitter operating conditions for satisfying RF exposure compliance..

For portable applications OEM integrators need no SAR evaluation. The max source-based time-averaged output of 6.21mW is below the low threshold of 24mW for d < 2.5 cm.

integral Antenna requirement § 15.203).

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. The Following calculation is the reference data for <2,5cm distance.

name			nature value	log value
max conducted power			2,42 mW	3,83 dBm
max Antenna gain dBi			2,57	4,10 dBi
calculated radiated power		EIRP	6,2087 mW	7,93 dBm
duty cycle factor				
frequency	2400 MHz			
dwell time			100,00 ms	
Time of occupancy/puls-train time			100,00 ms	
duty cycle factor	10log(dwell time/100 ms)		**100,00%**	0,00 dB
max source-based time-averaged power				
conducted power			**2,42** mW	3,83 dB
calculated radiated power		EIRP	**6,21** mW	7,93 dB

M P E

$$S = \frac{PG}{4\pi R^2}$$

calculated with max source-based time-averaged power
measured condacted power

r [cm]	20	2,5	1,5	**0,70**
S [mW/cm²]	**0,0012**	**0,079**	**0,220**	1,0
Limit general population	[mW/cm²]	1,0		
Limit occupational population	[mW/cm²]	5,0	for f =	2400 MHz

$$S = \frac{EIRP}{4\pi R^2} = \frac{1.64\ ERP}{4\pi R^2} = \frac{0.41\ ERP}{\pi R^2}$$

calculated with max source-based time-averaged power
measured radiated power

r [cm]	20	2,5	1,5	**n.a.**
S [mW/cm²]	**n.a.**			1,0