

MPE Calculation

Project No: B5200

Date: 7th April 2022

Product details:

Product name	AirGlu2
Company name	Timecode Systems
Address	Unit 6, Elgar Business Centre
	Mosely Road, Hallow
	Worcester
	WR2 6NJ
	United Kingdom
Contact	Paul Scurrall
Email	Paul.scurrall@atomos.com

MPE Calculation for Timecode Systems

FCC requirement:

This report contains calculation of maximum Possible Exposure for the AirGlu2.

Required distance to the user is assumed to be 20 cm

Mobile devices are defined by the FCC as transmitters designed to be used in other than fixed locations and generally to be used in such a way that a separation distance of 20cm is normally maintained between radiating structures and the body of the user or nearby persons.

These devices are normally evaluated for exposure potential with relation to the MPE limit.

As the 20cm separation may not be achievable under normal operating conditions, an RF exposure calculation is used to demonstrate the minimum distance required to be less than the power density limit, as required under FCC rules.

FCC rule part:47CFR2.1091(3)

Power density (S) relates to Equivalent Isotropic Radiated power (EIRP) according to the following:

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

Where,

R is the distance to the centre of radiation of the antenna (cm)

BLE Power Density

The worst case output power of the BLE module was = 5.3 mW

(Value obtained from test report C14485TR1)

The Power density (S) is calculated as:

Frequency (MHz)	Maximum EIRP (mW)	Power density (S) (mW/cm ²)	Power density limit (S) (mW/cm ²) 47CFR1.1310 Table 1
2402.0	5.3	0.0011	1.0

MPE Calculation for Timecode Systems

SRD Power Density

The worst case output power of the SRD module was = 8.9 mW
 (Value obtained from test report C14489TR1)

The Power density (S) is calculated as:

Frequency (MHz)	Maximum EIRP (mW)	Power density (S) (mW/cm ²)	Power density limit (S) (mW/cm ²) 47CFR1.1310 Table 1
915.8	8.9	0.0018	0.61 (f/1500)

f = Frequency (MHz)

Simultaneous Transmission BLE and SRD

For the case of MPE calculations for multiple transmitters, this has been dealt with in accordance with FCC Bulletin OET 65.

For transmitters which operate in frequency bands with a different MPE limit the Power Densities are calculated separately for each band, and then divided by Limit for each band. The sum of these ratios shall not exceed 1.

BLE Power density (S) (mW/cm ²)	BLE Power density / Limit ratio	SRD Power density (S) (mW/cm ²)	SRD Power density / Limit ratio	Summed Power density / Limit ratios	Ratio Limit
0.0011	0.0011	0.0018	0.0029	0.004	1

Conclusion:

The product was shown to be compliant with the 20cm power density limit.

MPE Calculation for Timecode Systems

ISED Requirement

RSS Standard:

RSS-102 Issue 5 Posted on Industry Canada website: March 19, 2015

Clause:2.5.2 Exemption Limits for Routine Evaluation — RF Exposure Evaluation

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than, in Watts,

$$1.31 \times 10^{-2} f^{0.6834}$$

adjusted for tune-up tolerance, where f is in MHz

BLE Evaluation

Calculation of e.i.r.p.:

Peak conducted power was measured, see Test Report C14485TR1.

frequency (MHz)*	Measured Power (W)	Limit (W)
2402	0.053	2.68

SRD Evaluation

Calculation of e.i.r.p.:

Peak conducted power was measured, see Test Report C14489TR1.

frequency (MHz)*	Measured Power (W)	Limit (W)
915.8	0.0089	1.38

Reference: B5200

MPE Calculation for Timecode Systems

Conclusion

The apparatus meets the exclusion requirements for RF exposure Evaluation.

Prepared by:



J Beavers MPhys(Hons), PhD
Radio Testing Team Lead