

Mühlau, 04.01.2018

RF Exposure Considerations for the ARU 3400

FCC ID: WJ9-ARU3400

The transmitter operation for the ARU 3400 covers the 902 – 928MHz operating band. The ARU3400 supports up to three external antennas but operates on only one antenna at a time.

The following FCC Rule Parts and procedures are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

KDB447498 D01 v06

Mobile and Portable Devices RF Exposure Procedures and Equipment Authorisation Policies

MPE CALCULATIONS

The MPE calculation used to calculate the safe operating distance for the user is:

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

Where

S = Power density

EIRP = Effective Isotropic Radiated Power (EIRP = P x G)

P = Conducted Transmitter Power

G = Antenna Gain (relative to an isotropic radiator)

R = distance to the centre of radiation of the antenna (safe operating distance)

ARU3400 Values:

Transmitter frequency range: 902 – 928MHz

Transmitter power: (Ref 15.247 (b)(4) – Antennas with gains >6dBi)

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- 1) For external 13dBi gain antenna use, 30dBm max. power is reduced by 7dB (13dBi – 6dB)
 $EIRP_{max} = +23dBm + 13dBi \text{ antenna gain} = +36dBm \text{ (4.0W)}$
- 2) For external 10dBi gain antenna use, 30dBm max. power is reduced by 4dB (10dBi – 6dB)
 $EIRP_{max} = +26dBm + 10dBi \text{ antenna gain} = +36dBm \text{ (4.0W)}$
- 3) For internal +6dBi gain antenna use
 $EIRP_{max} = +30dBm + 6dBi \text{ antenna gain} = +36dBm \text{ (4.0W)}$

Power Density Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of
 FCC Rule Part 1.1310 for 2.4GHz

$$S_{req1} = f_{MHz}/1500 \text{ mW/cm}^2 = 902/1500 = 0.6 \text{ mW/cm}^2$$

Calculation:

$$S = EIRP / 4 \pi R^2$$

$$R = \sqrt{EIRP / 4 \pi S}$$

$$R = \sqrt{4000 / (4 \pi \times 0.6)}$$

$$R = \sqrt{4000 / (7.54)}$$

$$R = 23.0$$

$$R = 23cm$$

Conclusion

The safe operating distance for the ARU3400 for General Population/ Uncontrolled Exposure limits is a minimum of 23cm using for all antennas specified to be used with the equipment

Signature:  Date: 04/01/2018

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 Managing director