

RF Exposure Evaluation Report — RSS-102 Issue 6

Declaration of RF Exposure Compliance for Exemption from Routine Evaluation

Product:	RF-V1 — Wireless Irrigation Valve Controller
Model(s):	RF-V1-900-2LATCH-BATT RF-V1-900-2LATCH-SOLAR RF-V1-900-4LATCH-BATT RF-V1-900-4LATCH-SOLAR
Manufacturer:	WiseConn IP GmbH
Applicable Standard:	RSS-102 Issue 6 (December 2023)
Exposure Environment:	General Public (Uncontrolled)
Device Classification:	Mobile device (separation distance > 20 cm)
Date:	2026-03-25

1. Device Description

The RF-V1 is a LoRa-based valve control and monitoring node for agricultural irrigation. It is installed on irrigation valves in open field, always at a distance greater than 20 cm from any person. It contains one certified radio module:

- RAKwireless RAK11720 — LoRa (902–928 MHz) + BLE (2402–2480 MHz)
— IC: 25908-RAK11720

2. Transmitter Parameters

Transmitter	Technology	Frequency Range	Max Conducted Power	Max Antenna Gain	Max EIRP
RAK11720 LoRa	LoRa (FHSS/ DTS)	902.3– 927.7 MHz	0.1445 W (21.6 dBm)	2.3 dBi	0.245 W (23.9 dBm)
RAK11720 BLE	BLE	2402–2480 MHz	0.0019 W (2.8 dBm)	3.12 dBi	0.0039 W (5.9 dBm)

3. Exemption Analysis per RSS-102 Section 6.6

The RF-V1 is a mobile device (always > 20 cm from the body). Per RSS-102 Section 6.6, FRL evaluation is exempt if EIRP is below the applicable threshold.

3.1 LoRa Transmitter (915 MHz)

Parameter	Value
Frequency (f)	915 MHz
Applicable exemption formula (300 MHz–6 GHz)	$EIRP \leq 1.31 \times 10^{-2} \times f^{0.6834} \text{ W}$
Exemption threshold calculation	$1.31 \times 10^{-2} \times 915^{0.6834} = 1.31 \times 10^{-2} \times 188.7 = \mathbf{2.472 \text{ W}}$
Actual max EIRP	0.245 W
EIRP < Threshold?	YES — 0.245 W << 2.472 W → EXEMPT

3.2 BLE Transmitter (2440 MHz)

Parameter	Value
Frequency (f)	2440 MHz
Applicable exemption formula (300 MHz–6 GHz)	$EIRP \leq 1.31 \times 10^{-2} \times f^{0.6834} \text{ W}$
Exemption threshold calculation	$1.31 \times 10^{-2} \times 2440^{0.6834} = 1.31 \times 10^{-2} \times 380.5 = \mathbf{4.985 \text{ W}}$
Actual max EIRP	0.0039 W
EIRP < Threshold?	YES — 0.0039 W << 4.985 W → EXEMPT

4. Simultaneous Transmission Assessment

LoRa and BLE do not transmit simultaneously in the RF-V1. Even if they did, both are individually well below their respective exemption thresholds (by factors of 10× and 1000× respectively), so the combined exposure would remain compliant.

5. Minimum Separation Distance

The RF-V1 is installed on irrigation valves in agricultural fields. The minimum separation distance between the device and any person during normal operation is > 20 cm (typically > 50 cm).

6. Conclusion

The WiseConn RF-V1 meets the exemption limits per RSS-102 Issue 6, Section 6.6. All transmitters operate well below the applicable EIRP thresholds. No SAR, APD, or FRL testing is required.

A signed Declaration of RF Exposure Compliance (Annex B of RSS-102) shall be submitted with the certification application.

7. User Manual Statement

The following statement shall be included in the user manual:

English: This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

French: Cet équipement est conforme aux limites d'exposition aux rayonnements RSS-102 de l'ISDE établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.