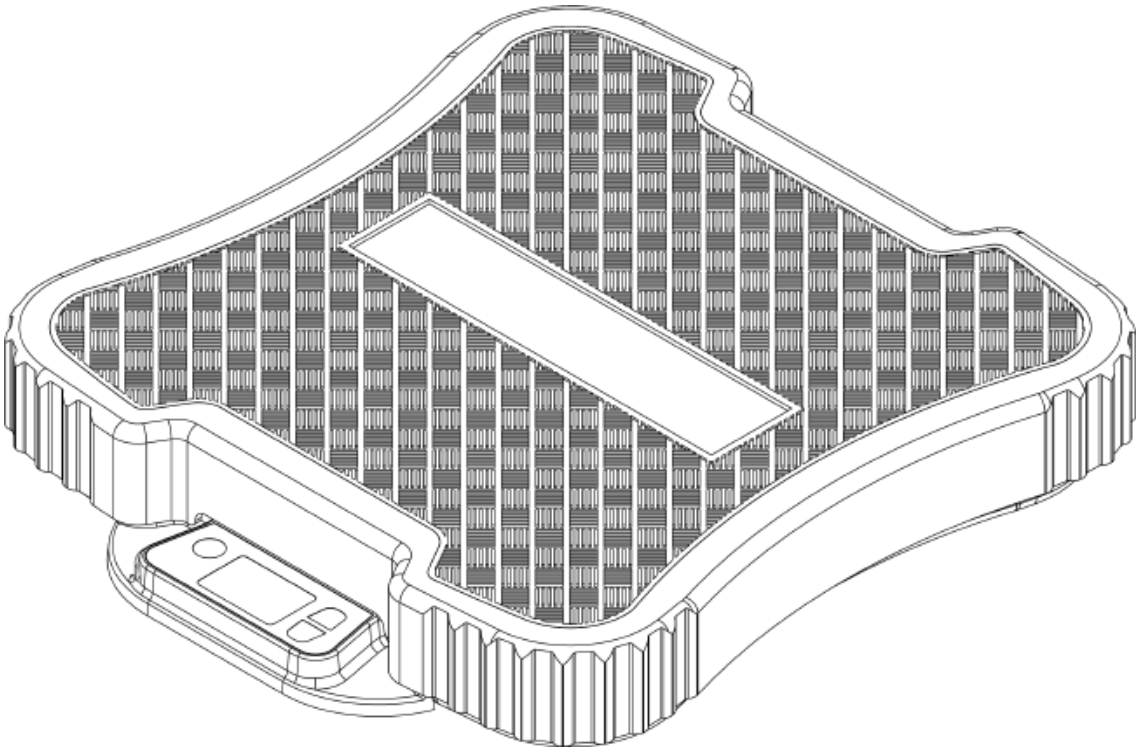
Appion™



WS260™

PRECISION SCALE

OPERATION MANUAL

www.AppionTools.com

⚠ WARNING

TO REDUCE THE RISK OF INJURY OR PRODUCT DAMAGE, READ OPERATION MANUAL PRIOR TO OPERATING PRODUCT.

Introduction

Thank you for your purchase of the Appion WS260 Precision Scale. This scale was designed to offer accurate measurement in a rugged & durable package that stands up to field service work. Aluminum construction creates a lightweight, reliable platform and combined with advanced electronics creates a scale that is highly versatile on the job. From critical charges measured in grams, to large systems with hundreds of pounds of refrigerant, the WS260 has the ability to handle whatever the next jobsite holds.

The built in display allows standalone use, or connect to the Appion Central Mobile App to access advanced functionality. Like all Appion products, the WS260 is backed by Lifetime Technical Support.

Table of Contents

Warnings and Safety Information

IMPORTANT - READ THIS MANUAL BEFORE OPERATION

This Operation Manual contains important information for protecting your safety and preventing equipment problems. Unsafe operation could lead to serious injury or death to you or others. For best results and safe operation, read this entire manual before operation. Keep this manual in a safe, accessible location during operation.

PERSONAL PROTECTIVE EQUIPMENT AND MSDS

⚠ WARNING When working with refrigerants, always use the appropriate Personal Protective Equipment (PPE), including eye and hand protection. Read all Material Safety Data Sheets (MSDS) for any compounds that you are likely to encounter during operation. Failure to do so could lead to injury or death.

HAZARD: RISK TO BREATHING (ASPHYXIATION)

⚠ DANGER Air and refrigerants pumped during refrigerant recovery may pose certain breathing hazards.

WHAT CAN HAPPEN	HOW TO PREVENT IT
Refrigerant vapors may be harmful or toxic when inhaled.	Use only in well ventilated areas. In enclosed areas, mechanical ventilation should provide at least four air changes per hour.

HAZARD: RISK FROM UNATTENDED OPERATION

⚠ CAUTION Factors affecting operation may change during the recovery process.

WHAT CAN HAPPEN	HOW TO PREVENT IT
As refrigerant recovery is a dynamic process, and often performed in open spaces, factors affecting the operation of the unit may change.	Always remain in attendance with Refrigerant Recovery Equipment while it is operating. Remain observant to changes in environment, refrigerant pressure and refrigerant temperature.

Refrigerant Storage Container Safety

⚠ WARNING Use only DOT CFR 49 or UL-approved storage containers for recovered refrigerant.

WHAT CAN HAPPEN	HOW TO PREVENT IT
Refrigerant storage containers may vent or explode when the working pressure of the container is exceeded.	Refrigerant storage containers are designed with different working pressures. Verify that the rating of the storage cylinder is appropriate for the refrigerant being recovered. For R-410a, 4BA400 and 4BW400 are appropriate ratings for refrigerant storage containers.
"80% Shut Off Switches," also known as Tank Overfill Sensors and Overfill Protection devices, may fail to prevent overfilling of the storage cylinder, leading to venting or explosion. These sensors only cut power to the recovery machine, and do not stop the flow of refrigerant, which may continue due to a siphon, or due to temperature-induced migration.	Do not rely on these switches to prevent overfilling. Only a refrigerant scale can provide an active and accurate measurement of the amount of refrigerant in the storage container. Do not rely on these switches to stop the flow of refrigerant into the container. Only the valves on the recovery machine and on the cylinder can stop the flow of refrigerant into the container.
Refrigerant expands when heated (**Diagram 1**), and storage containers may vent or explode when filled over 80% capacity.	A refrigerant scale must be used to monitor the amount of refrigerant in the storage container. Be sure to close the valves on the storage container when it has reached 80% capacity.

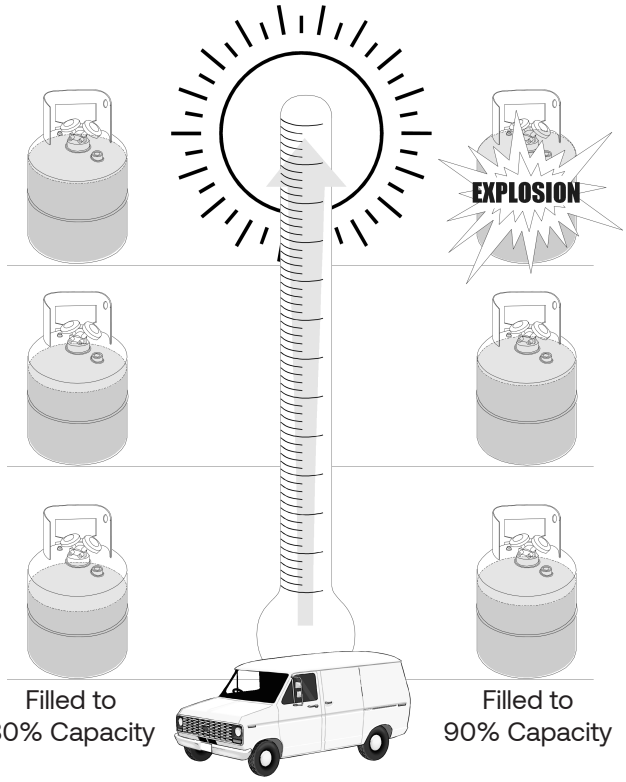


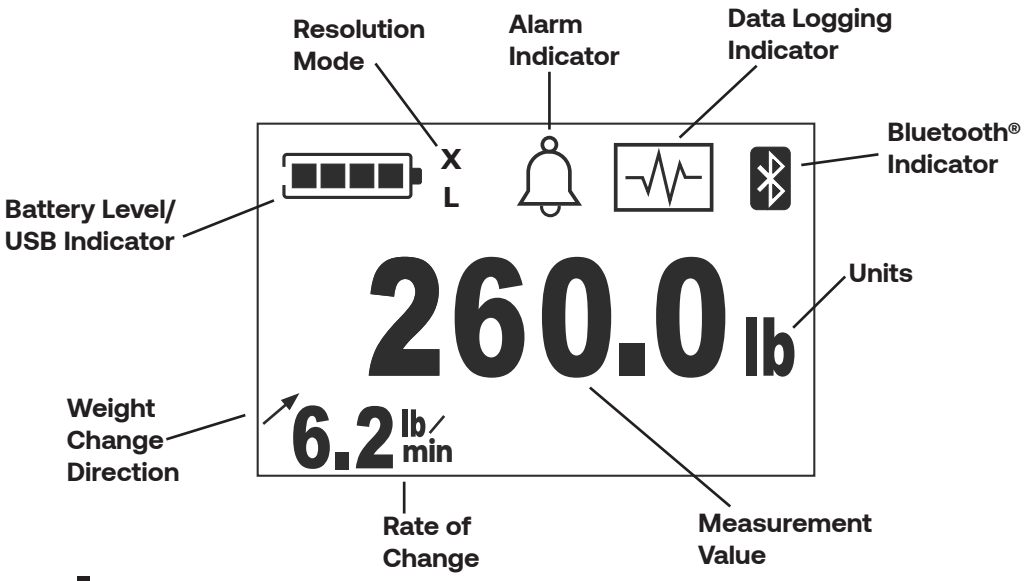
Diagram 1

Overfilled storage containers may explode due to liquid refrigerant expanding when heated.

Transportation of refrigerant storage cylinders more than 80% full is a DOT violation.

✪ **See Page 8 for information on how to calculate 80% Fill Weight**

Display



Controls

Function	MENU	HOLD FOR UNITS	TARE
Press	-Menu -Select Menu Item	-Backlight -Up Key	-Tare -Down Key
Long Press*	-Power Off	-Units Menu	-Zero

***Long Press** - When the button is pressed for 2 seconds or more*

Tare vs Zero

- The **Tare** function is used to *reset* the reading and account for the container weight.
  Example: *Technician is recovering into an empty cylinder and wishes to track the weight of refrigerant removed from the system.*

- The **Zero** function is used to *clear* the reading **and** store the weight of an **empty** platform.
  Example: *Technician has noted that the scale does not read 0.0 lbs when unladen on a flat, level surface.*

Note: *The Display Backlight will momentairally turn off when Tared or Zeroed. This operation is normal.*

External Power

A USB Type-C cable (sold separately) may be used to power the WS260 in cases where battery power is not sufficient, or long-term use is desired. Remove the protective rubber plug on the left side of the display to access the USB-C port. A standard smartphone wall adapter (5V/1A) is adequate.

Getting Started

1. Remove the WS260 from its protective case and place on a level and firm surface. If the scale is used on a sloped or otherwise unstable surface, irregular or inaccurate readings may result.
2. Press the power button to turn on the WS260.
3. Take note of the reading on the display. If the reading does not show *zero* with an empty platform, you should 'zero' the scale to ensure an accurate reading. Press and hold the TARE button to zero the WS260.
4. With the scale properly zeroed, you may now weigh your materials.
5. If desired, connect to the Appion Central Mobile App to view remote readings, set alarms, download data and more.

Bluetooth® Wireless Operation

NOTE: Bluetooth® communication requires a compatible device running the Appion Central Mobile App. Visit the App Store or Google Play to download the latest version.

The WS260 is equipped with long range, low energy Bluetooth® technology. To connect to the WS260, simply open the Appion Central Mobile App and navigate to the 'My Devices' submenu. Bluetooth® connectivity is always enabled for ease of use and fast connections to your device. If desired, you can change the range (Normal or Long Range) in the main menu of the WS260. Note that changing to 'Long Range' will reduce battery life but enable up to ≈984ft (≈300m) line-of-sight connectivity.

Menu Items

CLEAR ALARMS
Clear any alarms that have been triggered. Alarms are set using the Appion Central Mobile App.

MODE/RESOLUTION
Three resolution modes are available:
Normal: 10g / 0.5 oz / 0.1 lb resolution - ***Ideal for most applications***
High: 1g *(under 50kg)*/ 10g *(over 50kg)* - ***Ideal for critical charge applications***
0.1 oz / 0.01 lb *(under 100lb)*, 0.5oz / 0.1 lb *(over 100lb)*
Extended Battery Life: 10g / 1 oz / 0.1 lb resolution - ***Up to 1200 hours battery life***

CHANGE UNITS
The WS260 can display measurements in

Kilograms	Kg		Pounds	Lb	Oz
	Kg & g			Lb & Oz	

DISPLAY SETTINGS
Change **Backlight Timeout & Brightness**, **Rotate Display 180º**, and toggle the **Rate of Change** view on the main display.

DATA LOG
See **Page 7** for more information

BLUETOOTH® RANGE
Two ranges are available; **Normal** (≈328ft/100m) & **Long Range** (≈984ft/300m) - [line-of-sight]

ZERO SCALE
Zeroing the scale will clear the reading **and** store the weight of an **empty** platform.

Getting Started (continued)

Data Logging

The WS260 is equipped with built in Data Logging capabilities, enabling the technician to record data without the need to connect to a mobile device. To retrieve data recorded on the scale, you must connect to the Appion Central Mobile App and download it to your device.

Data logging & settings can be accessed via the menu.

RECORDING DATA

1. Navigate to 'DATA LOG' in the menu
2. Select 'START' to begin recording. The data logging symbol  on the main screen will flash when recording is active. The symbol will also be displayed if there is data stored on the scale.
3. Select 'STOP' to end recording.

STATUS

Activating this option will display the current status of the data log (whether the data log is idle or active) as well as the number of data points stored.

LOG INTERVAL

Set the rate at which the scale will record data. A shorter interval will result in a more detailed log. Select from 1, 5, 10, 30 & 60 second intervals.

ERASE

Activating this option erases the current data log and removes the data log symbol from the main screen.

Appion Central Mobile App

Appion Central unlocks the full potential of the WS260, and is available on the App Store and Google Play. Search for 'Appion' or visit www.AppionTools.com to download the latest version.

Download on the App Store

GET IT ON Google Play

Features Include...

- Remote readings
- Set high/low alarms
- Download stored Data Logs
- Calculate 80% Tank Fill
- Set target charge weight
- Adjust scale settings
- Register products
- Extensive PT Chart Lookup
- Superheat/Subcool Calculations
- Manage refrigerant tank inventory

...And more!

NOTE: Development of Appion Central is ongoing, and any information presented in the manual about Appion Central may not be up to date. Features and capabilities are subject to change without notice. Visit the App Store or Google Play to download the latest version.

Refrigerant Recovery Tips

Accounting for Hose Weight

The weight of recovery hoses should be taken into consideration during recovery and charging. Be sure to 'tare' the scale only after placing the cylinder on the platform **and** connecting hoses (to both tank and system). Also make note of the weight if hoses are removed at any point during the process.

Purging Non-Condensables from Recovery Cylinders

In the event that the Recovery Cylinder pressure is higher than expected, or if the recovery process seems slower than usual, use an external gauge (not the gauge on the recovery machine) and a Refrigerant Pressure/Temperature chart to check for the presence of non-condensable gases in the cylinder.

You can bleed/purge non-condensables into another cylinder following this procedure:

1. The Recovery Cylinder must remain undisturbed for at least 24 hours for the non-condensables to rise to the top of the cylinder.
2. Through a Manifold Gauge Set, connect the Recovery Cylinder Vapor Port to the Vapor Port of a second recovery cylinder.
3. Consult a Refrigerant Pressure/Temperature chart, and check the temperature of the Recovery Cylinder to determine what the pressure should be.
4. While the pressure is higher than the pressure on the chart, slowly open the Vapor Port to bleed off excess pressure until it is about 5 psi (0.35 Kg/cm^2) above the pressure listed on the chart.
5. Close the valves and let the cylinder stand still for 10 minutes. Repeat if necessary.

80% Fill Weight

Refrigerant recovery cylinders should only be filled to 80% of their **maximum** volume to allow for expansion during transportation. Recovery cylinder weight capacity is calculated by the manufacturer using water and given as **Water Capacity**. Since refrigerant has a different density than water you must make a quick calculation to determine the **maximum weight** of refrigerant you can recover.

Refrigerant	Liquid Density @ 130ºF (Lb/Ft^3)	**Fill Multiplier**
Water	61.522	-
R-22	66.312	**1.08**
R-134a	67.46	**1.10**
R-404A	53.18	**0.86**
R-407C	62.28	**1.01**
R-410A	56.11	**0.91**
R-417A	62.383	**1.01**
R-417C	65.243	**1.06**
R-422A	58.343	**0.95**
R-422B	61.85	**1.01**
R-422C	59.174	**0.96**
R-422D	60.642	**0.99**
R-437A	65.231	**1.06**
R-438A	61.804	**1.00**
R-454B	51.343	**0.83**

✪ **See Page 4 for additional information**

Stamped markings on the recovery tank indicate Tare Weight (**TW**) and Water Capacity (**WC**). The following equation should be used to calculate the maximum weight allowed in a cylinder.

WC x Fill Multiplier x 0.8 + TW
= Max Total Tank Weight

Example (R-22): WC is 47.6Lbs, TW is 24Lbs.

47.6 x 1.08 x 0.8 + 24 = 65.1 Lbs Total Tank Weight
(41.1Lbs of R-22)

Refrigerant Recovery Tips (Continued)

Preparing a Cylinder for Recovery

Prior to beginning recovery, the cylinder should always be evacuated with a vacuum pump. A deep vacuum of 500 microns or better is recommended as this eliminates the possibility of non-condensables as well as improves the initial refrigerant transfer. Always verify with a digital vacuum gauge to ensure you have hit the target. **Note:** new recovery cylinders may not be sufficiently evacuated - **always verify before use**.

Preparing for Fast Refrigerant Recovery

Every recovery procedure starts with the same four basics:

- **Remove** any **access valve cores** from the AC/R System access fittings with a Valve Core Removal Tool. This removes restrictions that would otherwise limit the performance of the recovery machine and/or cause overheating of the recovery cylinder.
- **Remove** any **core depressors** from the hose fittings. Do not use "quick disconnect" or "auto-shutoff" hose connections for refrigerant recovery, as this can bring the recovery to a halt. Use only ball valves for low-loss.
- **Use** the shortest length of **3/8"-diameter hoses** possible on **every** connection. Even with 1/4" fittings, the larger hose diameter can deliver better performance during recovery.
- **Purge** the hoses of **non-condensables** as you connect them, as needed, using best practices to minimize any refrigerant release (aka "*de minimis*"). Excess non-condensables can cause tank overheating, and may contaminate recovered refrigerant.

✪ **Tip: Consult the manufacturer of your Refrigerant Recovery Machine for setup guidance.**

💻 ***Visit www.AppionTools.com/FullFlow to learn more***

Additional Equipment Considerations

Refrigerant recovery requires - and can often benefit from specific use of - additional equipment that connects the recovery machine to the system and recovery cylinder. Verify operational details and safety information from the manufacturers of other equipment before use.

- ⚠ CAUTION A leaking hose may cause venting of refrigerant, and may introduce atmospheric air or other contaminants into the recovered refrigerant. Examine the **gaskets on each hose** to ensure they are intact, checking for any damage or wear that may lead to leaks.
- **Valve Core Removal Tools** with a ball valve (such as Appion MegaFlow VCRT) can be used as high flow low-loss fittings, in addition to the main function of removing valve cores.
- The **recovery cylinder** should have extra capacity beyond the amount you intend to recover.
- Examine your **external manifold gauges** (if used) for proper valve operation and calibration of the gauges. Contact the manifold gauge manufacturer for instructions in this process. **Note:** *Appion does not recommend the use of a manifold gauge set on most systems due to restriction of flow & refrigerant loss.*
- Use a **new inline filter dryer** when pumping dirty refrigerant. Replace the filter dryer after each use. If the filter has exceeded its capacity, this may affect the performance of the recovery machine.
- Use a **sight glass** to verify liquid flow. This can also be useful for troubleshooting purposes. Make sure that the sight glass is in good condition and does not leak.

Specifications

Capacity	120Kg (264.5 lb)
Accuracy	± 5g 0-10Kg, 5g ± 0.03% of Reading
Resolution	**Normal:** 10g / 0.5 oz / 0.1 lb **High:** 1g / 0.1 oz / 0.01 lb [or] 10g / 0.5 oz / 0.1 lb **Extended Battery Life:** 10g / 1 oz / 0.1 lb
Wireless Range	up to ≈984ft (≈300m) line-of-sight
Durability Rating	IP65
Battery Life	150 hours (High Resolution) to 1200 hours (Extended Battery Life)
Units	**Pounds** (Lb, Lb & Oz, Oz), **Kilograms** (Kg, Kg & g)
Power Source	(3) AAA Batteries, USB-C
Operating Temperature Range	14-122°F (-10 - 50 °C)
Product Weight	[Scale] 10 lbs (4.5kg), [Scale+Case] 13 lbs (5.9kg)
Product Dimensions	[Scale] 13”x12”x2.25”, [Case] 13.5”x 17.5”x 3.25”
Max. Cylinder Size (Circumference of Base)	9 in (22.86 cm)
Bluetooth® Radio Info	

RELATED ACCESSORY ORDERING INFORMATION

PRODUCT	DESCRIPTION	PART NO.
Twin Cylinder Refrigerant Recovery Machine	G5Twin Refrigerant Recovery Machine	G5TWIN
Valve Core Tools	MegaFlow™ Valve Core Removal Tool - (1/4in. & 5/16in.)	MGAVCT (1/4”) MGAVCR (5/16”)
Refrigerant Recovery Hoses	MegaFlow™ 3/8 in. Hose (1/4 in. FL to 1/4 in. FL, Yellow)	MH380006AAY (6ft) MH380004AAY (4ft)
Charging Tee	MegaSeal™ Low-Loss Charging T-Fitting- (1/4in. & 5/16in.)	CTEE14 (1/4”) CTEE516 (5/16”)

Factory Limited Warranty

A **One-Year Factory Limited Warranty** is provided on purchases of new equipment through authorized Appion product Dealers. Appion's Factory Limited Warranty covers any failure due to defects in materials or workmanship occurring during the applicable warranty period and return shipping in the United States only. Only the original retail purchaser (herein referred to as the "End User") is covered by this Factory Limited Warranty.

Requests for **returns** must be made through the Dealer where the item was purchased. Return policies vary by Dealer. **'Over-the-Counter' exchanges** must be approved by Appion within 90 days of purchase. Many common issues are easy to troubleshoot and solve. Call Appion at 303-937-1580 for troubleshooting.

Requests for Factory Warranty Services during the warranty period in the United States should be made directly to Appion Inc.
To claim Factory Warranty Service, contact Appion by phone at 303-937-1580 or email at Repairs@AppionInc.com.

To receive the full One-Year Factory Limited Warranty, purchase only from authorized Appion sellers as identified on www.AppionTools.com. Purchases made through **Unauthorized Dealers** are done at the End User's own risk and **do not qualify** for Appion's Factory Limited Warranty.

Complete Warranty Information is available at www.AppionTools.com/Support

Regulatory Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission
Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Caution
To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Radio Equipment
This device complies with Industry Canada licence-exempt RSS-210 standard. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Équipement radio d'Industrie Canada
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio
exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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