



100 Series Radio Frequency

ChoiceConnect™

This document provides general information about radio frequency (RF) electromagnetic fields from ChoiceConnect wireless communication equipment. This information has been provided by Itron which has evaluated the ChoiceConnect equipment for RF emissions. The ChoiceConnect equipment is compliant with Federal Communications Commission (FCC) regulations.

FREQUENTLY ASKED QUESTIONS

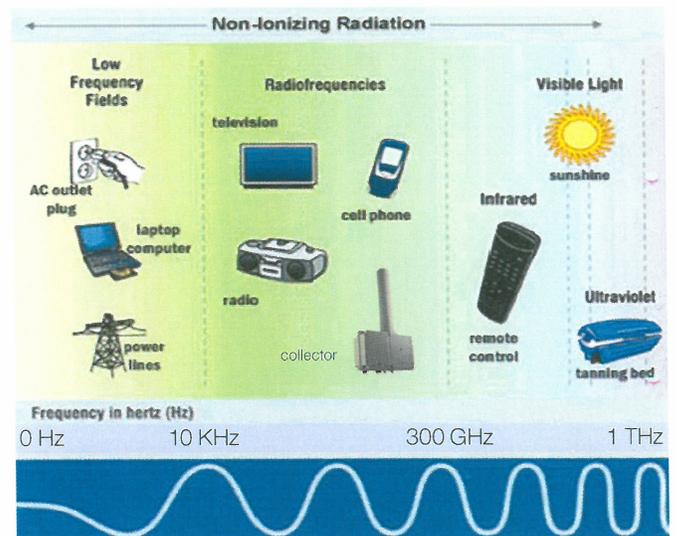
What is radio frequency?

RF energy is all around us. It plays a critical role in the communications systems that we depend on every day, such as police and fire radio systems and pagers, radio and television broadcasts and cellular telephones. Many of the conveniences we've grown accustomed to in our homes, such as cordless phones and wireless internet (WiFi), utilize radio frequency.

What frequencies are used by Itron's ChoiceConnect devices?

ChoiceConnect wireless communication equipment operates in the Industrial, Scientific and Medical (ISM) bands at frequencies from 902 megahertz (MHz) to 928 MHz.

The Food and Drug Administration (FDA) and the FDA's Center for Devices and Radiological Health (CDRH) have classified radiation emitted by devices operating at these RF frequencies as non-ionizing, meaning they cannot ionize atoms or molecules. Other types of nonionizing radiation include visible and infrared light.



How often do the ChoiceConnect devices transmit data?

In mobile mode, the ChoiceConnect endpoint devices transmit data in very short pulses throughout the day for a total transmission time of less than 1.5 minutes per day. In fixed network mode, the devices transmit for a total of less than 15 seconds per day.

What is the power output from the ChoiceConnect devices when they are transmitting data?

The maximum power output for the ChoiceConnect endpoint devices is less than half a watt, while the maximum power output of the collection device is less than 1 watt. In comparison, the average light bulb is 60 watts.

Are there any health hazards associated with the ChoiceConnect devices?

According to several reputable organizations, including the Electric Power Research Institute and Utilities Telecom Council, there is no demonstrated cause and effect relationship between low levels of RF exposure and adverse human health effects.

The World Health Organization (WHO) notes in its Fact Sheet 304:

“[T]o date, the only health effect from RF fields identified in scientific reviews has been related to an increase in body temperature ($> 1\text{ }^{\circ}\text{C}$) from exposure at very high field intensity found only in certain industrial facilities, such as RF heaters. The levels of RF exposure from base stations and wireless networks are so low that the temperature increases are insignificant and do not affect human health.”

See WHO Fact Sheet 304 for more information about RF fields at <http://www.who.int/mediacentre/factsheets/fs304/en/index.html>.

Are there RF exposure standards for the ChoiceConnect devices?

Since 1996, the Federal Communications Commission (FCC) has required all wireless communications devices sold in the United States meet minimum guidelines for safe human exposure to radio frequency energy. In addition, federal health and safety agencies including the EPA, FDA, National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) consistently monitor and regulate RF safety.

Itron's products are stringently evaluated for RF safety and meet all Federal Communication Commission (FCC), Industry Canada (IC), and Institute of Electrical and Electronic Engineers (IEEE) standards.

What are the FCC's exposure guidelines?

The FCC has established exposure guidelines for RF devices operating in the 300 kilohertz (kHz) – 100 GHz range. These safety guidelines are outlined in the publication, OET Bulletin 65 Edition 97-01, *Evaluating Compliance with FCC guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*.

The general population exposure limits set by the FCC for the frequency range utilized by the endpoint and other devices like cordless phones and baby monitors, is 0.6 milliwatts per centimeter squared (mW/cm^2) at 902 MHz.

When a typical endpoint device is transmitting at its maximum power level, the exposure to radio frequency energy at a distance of 20 centimeters from the endpoint is $0.315\text{ mW}/\text{cm}^2$ at 902 MHz, or almost 50 percent of the exposure limit set by the FCC.

When the collection device is transmitting at its maximum power level, the exposure to radio frequency energy at a distance of 20 feet from the collector is $0.0014\text{ mW}/\text{cm}^2$. This calculation is for radio frequency energy radiated outward from the high gain antenna attached to the ChoiceConnect collector.

Where can I go to learn more about regulatory compliance?

The FCC's document OET Bulletin 65 Edition 97-01, *Evaluating Compliance with FCC guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, details how to measure or calculate levels of RF radiation and determine compliance with exposure limits.

Additionally, FCC OET Bulletin 65 Supplement C Edition 01-01 (known as OET-65C), provides further guidance on determining compliance for portable and mobile devices.

These documents may be found at www.fcc.gov/encyclopedia/radio-frequency-safety

FOR MORE INFORMATION ON THE EFFECTS OF RF ENERGY EXPOSURE, PLEASE VISIT THE FOLLOWING SITES:

FCC: Questions regarding potential RF hazards from FCC-regulated transmitters can be directed to the Federal Communications Commission, Consumer & Governmental Affairs Bureau, 445 12th Street, S.W., Washington, D.C. 20554; Phone: 1.888.225.5322; E-mail: rfsafety@fcc.gov; or go to: www.fcc.gov/encyclopedia/radio-frequency-safety

FDA: For information about radiation from microwave ovens and other consumer and industrial products contact: Center for Devices and Radiological Health (CDRH), Food and Drug Administration. www.fda.gov/Radiation-EmittingProducts

OSHA: The Occupational Safety and Health Administration's (OSHA) Health Response Team has been involved in studies related to occupational exposure to RF radiation. www.osha.gov/SLTC/radiation_nonionizing/index.html

WHO: The WHO's Electromagnetic Fields information page is located at: www.who.int/peh-emf/en/

For Canada-specific RF regulation information, visit the following sites:

Industry Canada – Safety Codes

RSS-102, Radio Standards Specification 102, Radio Frequency Exposure Compliance of Radio communication Apparatus (All Frequency Bands).

www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01904.html

CPC-2-0-03 - Radio communication and Broadcasting Antenna Systems www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08991.html

Health Canada – Safety Codes

Radiofrequency Fields and Safety Code 6

www.hc-sc.gc.ca/ewh-semt/radiation/cons/radiofreq/index-eng.php

Smart Meter Information

www.hc-sc.gc.ca/hl-vs/ijh-vsv/prod/meters-compteurs-eng.php



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