Health and Safety Characteristics: **Allegro AMI**

RF Exposure

Three primary factors contribute to RF exposure from a transmitting device:

1. SIGNAL DURATION: the term "duty cycle" refers to the duration of time a transmitter device can be actively transmitting signal versus the amount of time it is required to remain in a non-transmitting state. Allegro AMI endpoints turn on to transmit data for a fraction of a second per day totaling in slightly over one (1) minute per year.

2. RF POWER: The output power from an Allegro AMI endpoint transmission is significantly less than RF emissions from typical household items such as laptops, cell phones, and wireless routers.

3. DISTANCE FROM TRANSMITTING DEVICE: Allegro AMI endpoints will be installed in the same location as the existing meter and in many cases will be entirely underground, covered by the meter pit lid.

About Allegro

Allegro AMI endpoints communicate data to Base Stations where it is aggregated and sent to the cloud for use by the utility. Base Station antennas are generally installed on towers between 25 – 30 feet from the ground. If a person is standing near a tower with a Base Station, the RF exposure from the Base Station is at least twenty-five times less than the RF exposure from an Allegro AMI endpoint due to the installation height of the antenna.

Allegro AMI devices and communication equipment operate in the 450-470 MHz radio band over an FCC licensed frequency purchased specifically for the utility.

Power Density

Master Meter continually monitors regulatory and scientific developments related to human exposure to RF energy and relies upon the expert findings related to RF exposures and health effects, most notably the World Health Organization (WHO), Federal Communications Commission (FCC), U.S. Food and Drug Administration (FDA), and the Electric Power Research Institute (EPRI).

According to studies conducted by these organizations, no adverse short or long-term effects have been shown to occur from the RF emissions produced by advanced metering technologies or other such wireless networks. These regulatory agencies have provided the following guidelines to limit the potential adverse effects on health resulting from exposure to RF emissions.

I. ICNIRP *(International Commission on Non-Ionizing Radiation Protection)* whose guidelines were adopted by WHO *(World Health Organization)*, sets a level of maximal radiated power at 700mW. This results in a power density of: **140uW/cm² at a distance of 20cm.**

II. The FCC part 1.1307 (Environmental Assessments) and part 2.1091 *(Radiofrequency Radiation Exposure Evaluation)* sets the limits for power density at**: 307uW/cm² at a distance of 20cm.**

The Allegro AMI endpoint power density is a mere fraction: **0.019uW/cm² at a distance of 20cm**

For comparison, the radiated power densities of common commercial products are listed below – all of which greatly exceed the power output of the Allegro AMI Endpoint meter transmitter:

A.	**Smart Phone:**	(10 minutes / 20cm)	=	0.98uW/cm²
B.	**Wireless Router:**	(20 cm)	=	7.72uW/cm²
C.	**Microwave Oven:**	(5 minutes / 20 cm)	=	9.39uW/cm²

RF Immunity

According to the U.S. FDA, pacemakers must be immune to radiation of handheld wireless transmitters at a distance of 15cm. Because of the high level of RF shielding required by the FDA, RF emissions from the Allegro AMI endpoints will have no impact on FDA approved Pacemakers.

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