#### 14. DOES MORE THAN ONE BASE STATION AT A SITE INCREASE THE RF EXPOSURE?

Yes. However, the results from the compliance measurements have indicates that even in such cases, the RF exposure levels are way below the prescribed guidelines.

# 15. DO BASE STATIONS CONTINUOUSLY EMIT RF ENERGY?

Yes, base stations typically emit RF energy continuously to seamlessly support reliable wireless communication in that area.

# 16. How far should I be from a base station?

There is no prescribed distance at which a base station should be located from human dwellings. However, there are maximum exposure levels prescribed for both the public and occupational workers. The location of a base station is determined based chiefly on its ability to provide best coverage for the area at hand and enhance the capacity of the network in an area.

A general precaution would be to restrict areas directly in front of the antenna where the RF levels can potentially exceed the set human exposure limits. These restricted areas are typically not accessible to the public as the base station antennas are way above ground level.

# 17. WHAT ACTION IS UCC UNDERTAKING ON HUMAN EXPOSURE TO RF ENERGY FROM BASE STATIONS?

UCC conducts compliance measurements on the wireless communications transmissions of the licensed mobile network operators. UCC also conducts periodic studies/surveys to evaluate the RF exposure levels from base stations with the set safety limits. The assessments and investigations carried in Uganda thus far show that the various base station sites are within the safety RF exposure limits.

# 18. WHAT RF EXPOSURE SAFETY STANDARDS DOES UGANDA APPLY?

Uganda applies the International Commission for Non-Ionising Radiation Protection (ICNIRP) guidelines for limiting exposure. ICNIRP is a body of independent science experts addressing the important issues of possible adverse effects on human health of exposure to non-ionising radiation. The ICNIRP guidelines are endorsed by the World Health Organisation (WHO) and recommended by the International Telecommunications Union (ITU) and are adopted worldwide.

# **19. WHERE CAN I OBTAIN MORE INFORMATION?**

UCC is available to provide more information on any inquiries or questions regarding health and safety around telecommunications infrastructure (mobile phone base stations). For more information, you may contact:

# The Executive Director.

Uganda Communications Commission, UCC House, Plot 42-44, Spring Road, Bugolobi, P.O. Box 7376, Kampala (U)

Emails: ucc@ucc.co.ug, research@ucc.co.ug Toll Free line: 0800222777 **Office Numbers:** 0414339000/0312339000 Twitter: @UCC Official

Additional resources

- ITU EMF Guide
- ICNIRP Guidelines for limiting exposure to Electromagnetic Fields 100kHz to 300 GHz]:
- ITU-T Recommendations on Human Exposure to Electromagnetic Fields
- World Health Organisation (WHO): Research Agenda on EMFs • WHO: EMFs and public health: Mobile phones:



FAQS **ON RF EXPOSURE AROUND TELECOMMUNICATIONS BASE STATIONS** 



#### 1. WHAT IS A BASE STATION?

A base station is a set of equipment [comprising of antenna, radio equipment, power supply] that serves as a communications hub for a cellular [or mobile] network, allowing the transmission of voice and data communications. A base station helps your mobile device connect to the telecommunications network.

### 2. WHAT IS A MAST?

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A mast is one of the several types of supporting structure to which a base station is mounted. Other supporting structure for base stations commonly used include rooftops, towers, poles, etc.

#### 3. WHAT IS A BASE STATION SITE?

A base station site refers to a specific location where one or more wireless communication base stations are installed. This site may accommodate one or more supporting structures on the same ground, which can be used to install one or more base stations. Base station sites can be designed for single, shared, or collocated base stations.

#### 4. HOW DOES A MOBILE NETWORK OPERATE?

A mobile network operates by connecting mobile devices to each other through its network of base stations and other network components. The network uses wireless technology of radio frequency signal to transmit voice and data communications between connected devices. The network is managed by a mobile network operator.

#### 5. WHAT IS A RADIO FREQUENCY SIGNAL?

A radio frequency [RF] signal is a type of electromagnetic wave or energy that can carry information, such as audio, video or data, through the air. RF supports all wireless transmissions. Think of it like a message being sent through the airwaves, similar to how a radio station transmits music to your car radio. These signals can also be used for things like mobile phone communication, wifi, and television broadcasts.

### 6. WHAT IS RADIO FREQUENCY ENERGY?

RF energy is a form of electromagnetic radiation that operates at frequencies below the Ultra Violet band classified as non-ionizing radiation because they lack energy to effect changes in the atomic structure.

#### 7. DOES HUMAN BEING GET EXPOSED TO RF ENERGY IN EVERYDAY LIFE?

Yes, human beings are exposed to RF energy in everyday life. RF energy is emitted by many sources, including the sun, high voltage electric power lines, radio and television broadcast stations, GPS devices, Rada systems, cell phones and other wireless communication devices, Wi-Fi routers, microwave ovens, and even smart home devices among others. The amount of RF energy that a person is exposed to depends on various factors, including the distance from the source, the power output of the source, and the duration of exposure.

# 8. ARE THERE ANY POTENTIAL HEALTH EFFECTS ASSOCIATED WITH EXPOSURE TO RF ENERGY FROM BASE STATIONS?

The World Health Organisation states that there is no scientific evidence that exposure to RF energy from base stations causes adverse health effects. However, some studies have suggested a possible link between RF exposure from base stations and symptoms such as headaches, fatigue, and sleep disturbances. More research is being conducted to determine the level of exposure at which these effects may occur.

# 9. WHY ARE BASE STATIONS PLACED NEAR HUMAN DWELLINGS LIKE HOMES, TRADING CENTRES?

Base stations are an important component for wireless communication networks, as they are responsible for transmitting and receiving signals from wireless devices such as mobile phones and computers. They are typically placed near human dwellings to ensure good coverage and signal strength for residents and businesses to provide network coverage to people using mobile devices.

#### **10.** SHOULD BASE STATIONS BE LOCATED NEAR HUMAN DWELLINGS?

Yes. Base stations should be located near human dwellings. Our society relies on mobile devices working everywhere including homes, schools and work. Base stations operate at low power and produce low RF exposure in public areas and are specifically designed for the environment they are located in.

#### 11. IS IT SAFE TO LIVE NEAR A BASE STATION?



Yes. It is safe to live near a base station. The RF energy emitted by base stations is generally considered to be low-level and non-ionizing, which means it is not powerful enough to break chemical bonds in human cells and tissue, and thus less likely to cause health disruption. The strength of RF energy from base station antennas reduces rapidly with increasing distance and the levels at locations where the public can be exposed tend to be minimal.

### 12. How many base stations should be in a given area?

There is no standards number of base stations for a given area. The number of base station in an area is determined by the number of people using the network, the more the people, the more base stations needed to provide the service.

#### 13. DO MANY BASE STATIONS IN AN AREA INCREASE RF EXPOSURE?

No. The increase in number of base stations in an area and locating them near people using mobile devices reduce RF levels. This is because the mobile devices only need to transmit over a short distance to the nearest base station using less power. Here, the network is also operating more efficiently and only needs to communicate with nearby users. So, to minimize RF exposure, base stations are required to be located closer to





