

# Radio Spectrum and Technical Standards Advisory Committee

## SSAC Paper 8/2012 for information: Safety Practice for Non-ionising Radiation Protection

Office of the Communications Authority

Date: 9 October 2012

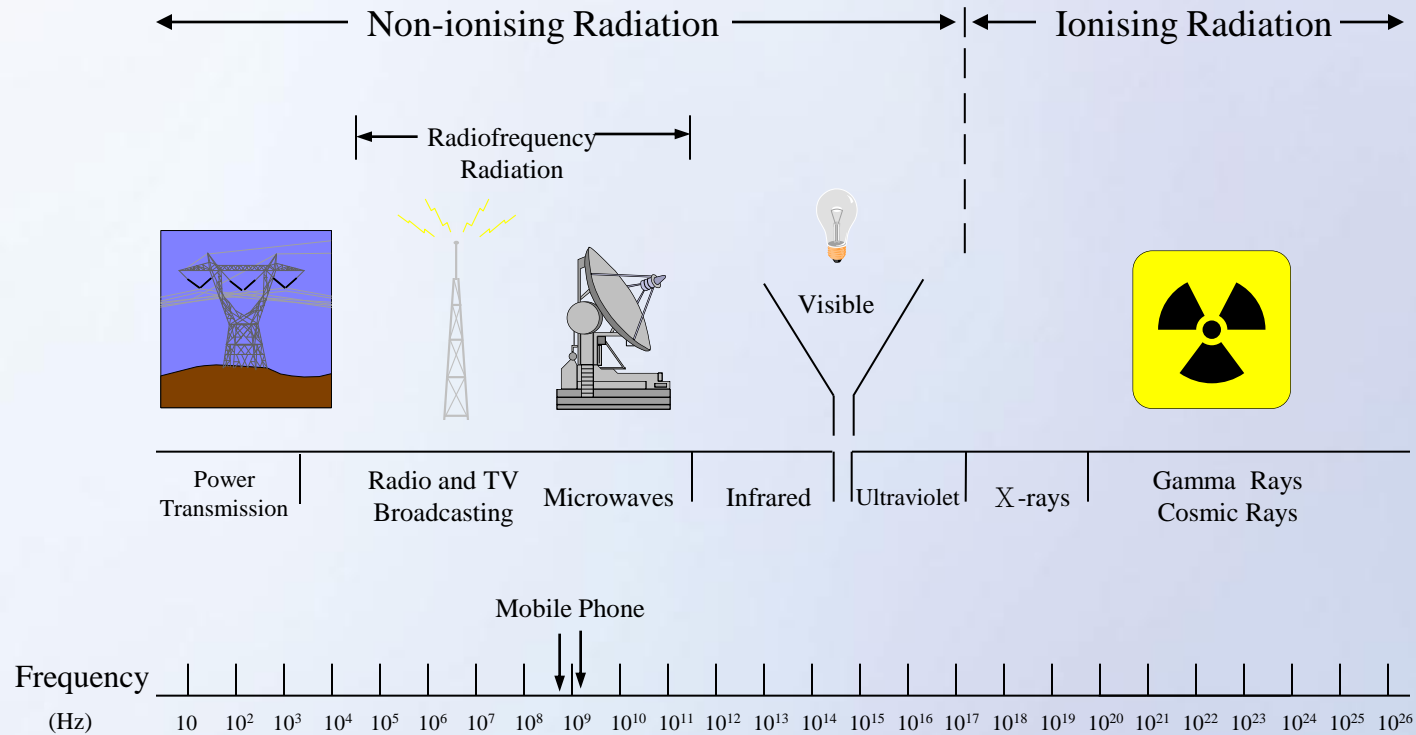
# Background

- Mobile phone base station ("base station") is an essential component of the mobile phone network
- Base station is required wherever there is a need to provide radio coverage
- Base station emits radiofrequency ("RF") electromagnetic radiation

# Electromagnetic Radiation

- Two types of Electromagnetic Radiation
  - Ionising Radiation
    - High energy, can cause ionisation
  - Non-ionising Radiation
    - Energy not strong enough to cause ionisation
- Base station's RF electromagnetic radiation is Non-ionising Radiation

# Electromagnetic Spectrum



# Health Effect from Exposure to RF Radiation

- According to World Health Organisation ("WHO") fact sheet no. 304, "Electromagnetic fields and public health – base stations and wireless technologies"
  - The only health effect has been related to an increase in body temperature ( $>1$  °C) from exposure at very high field intensity found only in certain industrial facilities, such as RF heaters
  - Slight increase in body temperatures is insignificant and does not affect human health
  - Studies have not established an increased risk of cancer

# RF Radiation Safety Standard

- The International Commission on Non-Ionising Radiation Protection ("ICNIRP") is a non-governmental organisation recognised by WHO in the field of non-ionising radiation (including RF radiation) protection
- In 1998, ICNIRP published "Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz)" that specifies the limits on non-ionising radiation for both general public and occupational exposure
- In 2009, ICNIRP reaffirmed that the limits in the frequency range 100 kHz – 300 GHz were applicable until further notice

# RF Radiation Safety Limit

- Reference Levels stipulated by ICNIRP

Frequency Range f (MHz)	E-field strength (V/m)	
	General Public	Occupational
10 – 400	28	61
400 – 2000	$1.375\sqrt{f}$	$3\sqrt{f}$
2000 – 300000	61	137

# RF Radiation Safety Requirement

- OFCA, in consultation with the Department of Health, adopts the RF exposure limits in the ICNIRP Guidelines to ensure RF radiation safety
- OFCA issued "Code of Practice for the Protection of Workers and Members of Public Against Non-Ionising Radiation Hazards from Radio Transmitting Equipment" ("CoP") which makes reference to the ICNIRP reference levels
- Base station operators are required to comply with the CoP



# Address Public Concern

- Publish "Know More About Radiofrequency Electromagnetic Radiation" leaflet
- Provide enquiry telephone and fax numbers
- Attend meetings to explain RF radiation safety issues
- Publish RF radiation safety advertisements on newspapers

# RF Radiation Level Measurement

- Conduct on-site measurements
  - Upon request
  - Sample check
  - Around 300 cases annually

# Thank you!