

# Electromagnetic field

## Providing end-to-end services for EMF testing and measurement services

### Overview

The continuous growth of wireless communication has in the recent past raised public awareness and concerns about the potential health hazards due to exposure to air waves (electromagnetic fields- EMF) for addressing these concerns the ICNIRP (International Commission on Non-Ionising Radiation Protection) and the WHO (World Health Organisation).

Since 1992 WHO has been studying the potential risks associated with so called non-ionising radiations, and in 1998 the ICNIRP published guidelines that each country should transpose into local laws and regulations. These guidelines are based on the effects that these radiations have on body temperature. You can find detailed information on WHO ([www.who.int](http://www.who.int)) and ICNIRP ([www.icnirp.org](http://www.icnirp.org)) web sites.

The basic restrictions and reference levels defined by the ICNIRP are guidelines, which have been used as a basis by many countries to implement their own recommendations or laws. However, some countries or cities have decided to set their own limits independently from these guidelines. To compare the measured exposure levels to the regulatory limits, measurement protocols have been defined, such as: ECC/ REC/ (02)04, EN50383, EN 50492, or IEEE Std.C95.3 for in-site measurements.

**Transform operations | Drive efficiencies**

## Service offering

TCTS service offerings are based on geographic requirements for the following deliverables:



Monitor actual levels and compare them to the regulatory limits



Address public concern through appropriate communication and ensure the network is deployed as per the guidelines set by global governing bodies



Provide services for occupational safety as a part of safety compliances



Simulate and control EMF radiation in real environments as applicable

Based on the above deliverables the customer can opt for either of the services offered as follows:



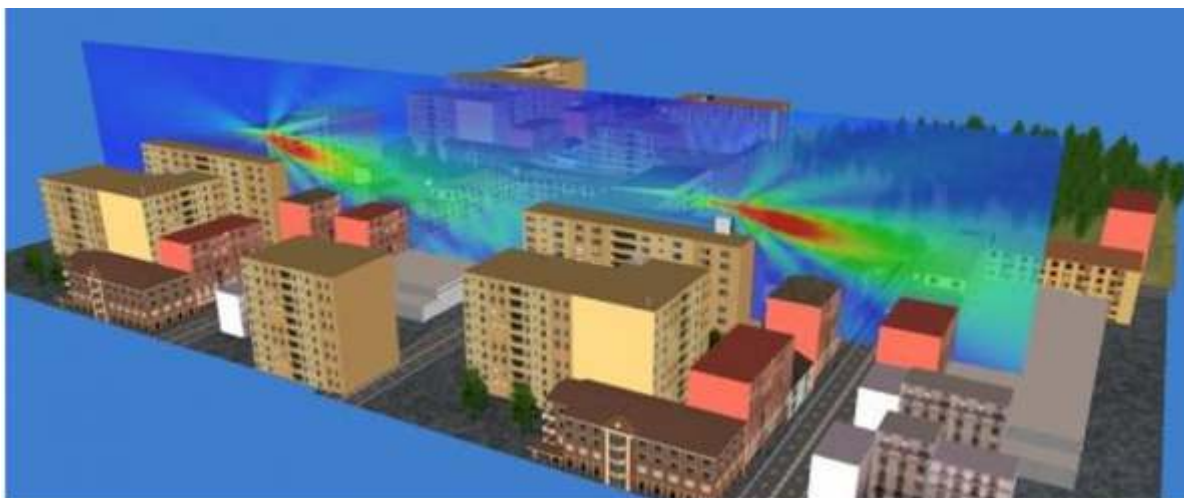
**Tool based EMF impact analysis**



**EMF database validation and field measurement services**

### Tool based EMF impact analysis:

- Prediction and analyse EMF exposure within a few hundred meters of the antennas while taking into account its environment
- CALCULATED POWER DENSITY/ MAX LIMIT (PD %) considering nearby sites within 100 mtrs. and broadcasting station within 1 Km
- Conclusion & remedial action report



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## EMF database validation and field measurement services

- Site survey for site database audit
- Calculation method: theoretical formula based approach
- EMF measurement :
  - **Broadband measurements**
  - **Frequency selective measurements**
- Remedial actions for EMF non-compliances sites
- Report generation and documentation as per regulatory guidelines

## Operation model

TCTS
Theoretical calculations
Electromagnetic mapping by software simulation
Broadband measurements (on Field)
Frequency selective measurements (on Field)
Field activities for EMF adherence
Support regulatory liaison

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## Value proposition

- Our SMEs have vast experience on telecom technology platforms and have cross technology expertise making us technology specific vendor agnostic service provider
- TCTS possesses a strong team of experts with practical exposures to leading tools and test and measurement devices used in telecom space for EMF testing and measurement
- Experience of operating wireless networks with a strong base of-65,000+ BTS and 6000+ Microcells (WCDMA, GSM, CDMA, WiMAX)
- Solution approach based on industry expertise and use of sophisticated tools combined with its global presence and partner support
- Leverages the telecom expertise of its parent company TCL and other Tata group companies who work in the same sphere of operations like Tata Teleservices, India and Neotel, South Africa

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