

Effective Management of Telecommunication Sites

It is crucial for owners of telecommunication sites to understand the stakes of an effective management of their installations. Indeed, the increasing demand for telecommunication services (broadcasting, mobile telephony, mobile radio, microwave transmission) results in service providers having a growing need for new infrastructures. This creates interesting business opportunities for the owners of telecommunication sites.

The questions that arise are as follows: How to ensure that the unused spaces on rooftops and telecommunication towers are optimized? How to control the electromagnetic interference, in order to attract more telecommunication service providers and thus increase the revenues of the property? How to ensure that this process respects safety requirements?

Technical Considerations

Service providers have less and less capital to build new telecommunication sites on which they would operate independently. Thus, existing rooftops and towers become choice locations for operators. However, the capacity for the owner of a site to provide and manage the space available in an optimal way requires technical planning and a detailed attention to the various security aspects.

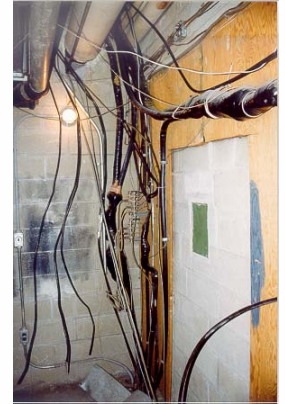
To increase the attractiveness of a telecommunication site, it is necessary to optimize its electromagnetic environment by identifying the possibilities of interference and intermodulation between the various systems. It is also beneficial to reserve certain spots on rooftops or towers for particular applications such as microwave links. The number of antennas at a site can be reduced by use of antenna multicoupling systems. Such a system arranges several frequencies used by various tenants on the same antenna thus optimizing the space available. Moreover, occasional evaluations of the electromagnetic field intensity ensure secure working conditions for all those with access to the site.

In addition to RF considerations, civil engineering recommendations must be respected. Structural analyses make it possible to determine if the tower or the roof can support the weight of additional equipment and the associated wind load of that equipment. Finally, a detailed attention must be given to the grounding system, including lightning protection.

Management Considerations

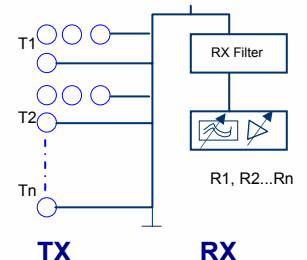
To emphasize the value of a site to a telecommunication service provider requires a good administration of the property, an ease of operation and rental costs reflecting current market value.

As for management considerations, it is necessary to keep in mind that telecommunication equipment requires a controlled environment. That is, temperature must be constant summer and winter, and moisture and dust must be limited.



The lack of horizontal and vertical isolation between the antennas degrades considerably the coverage potential of a site. In the above example, the generation of intermodos and spurious from receivers are not minimized. In order to facilitate operations, cable management is also required.

Multicoupling



Intermodulation Products

1st	A=B, A=C, ...
2 nd	A ± B, A ± C, ...
3 nd	A + B - C, A ± 2B, 2A ± B...
4 nd	A ± 3B, 2A ± 2B, 3A ± B, ...

A large amount of intermodulation products may exist depending on the number of frequencies operated on a site. However it is not true that all the cases create interference. It is thus necessary to be able to identify the relevant products.

YRH

Yves R. Hamel
et Associés Inc.

424 Guy Street
Suite 102
Montreal, Qc
Canada, H3J 1S6

telephone:
514 934 3024

fax:
514 934 2245

web: www.yrh.com
e-mail: Telecom@yrh.com

The housing of the telecommunication systems must meet these environmental criteria for all the operator/tenants. Moreover, on the rooftop, space must be considered for the installation of equipment shelters. Finally, these places, available for leasing to the operators, must have restricted access.

It is also necessary to objectively evaluate the lease value according to the space occupied. This evaluation will depend on the location of the building or the tower and if it meets the needs of a great number of telecommunication service providers. The attractiveness of a telecommunication site can be determined by evaluating its coverage potential and by identifying the microwave transmission link possibilities with nearby sites.

The operations of the companies offering telecommunication services require several arrangements with the owner of the site. Indeed, there must be easy access to the electric and telephone infrastructures, space planning to ensure possible expansion of their system, easy access to their installations just to name a few. Moreover, constant communication with all parties involved is imperative in order to keep up to date all databases and technical drawings of the installations present at the site.

Security Considerations

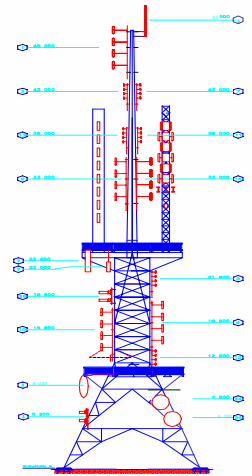
One of the security consideration is the exposure to electromagnetic radiation, a topic covered in the previous issue of YRH Spectrum (*Electromagnetic "Smog"?*). It is important for owners to be aware of the existing levels on a site to adequately envisage the procedures to be followed when work is being performed; for example, during roof repairs, during maintenance work on the tower or during installation of new equipment. Moreover, the owner must ensure conformity of his site with regards to the recommendations of Security Code 6.

A structural analysis also ensures the physical integrity of the site. Such an analysis is required for all new antenna installation.

Our Site Management Expertise

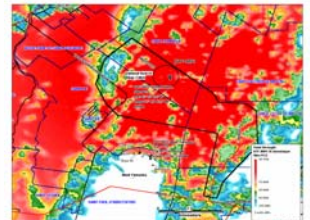
- RF studies including: Interference, intermodulation, desensitisation, coverage, microwave transmission paths ...
- Perform equipment surveys and drawings and maintain up to date installed equipment databases
- Management of electric and wired telecom infrastructures
- Establish lease agreements as well as installation, operation and security procedures for RF and structural issues
- Analysis of electromagnetic radiation levels. Provide safety recommendations and procedures
- Provide grounding and lightning protection recommendations

Site Documentation



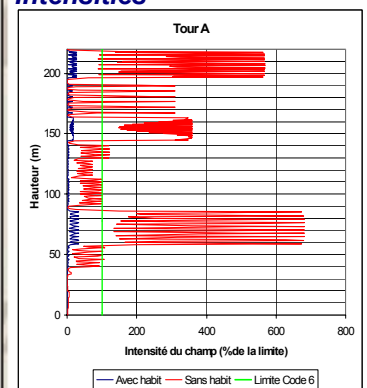
A good site documentation allows fast implementation of telecommunication systems and facilitates the follow up required for the frequencies present and the level of electromagnetic field intensities.

Coverage Analysis



Coverage maps created with our propagation tools allow us to predict the potential of a telecommunication site.

Analysis of RF Field Intensities



An analysis of the RF field levels in a tower with respect to height provides information to determine safe work procedures.



Yves R. Hamel
et Associés Inc.

Contact us for more
information!

424 Guy Street
Suite 102
Montreal, Qc
Canada, H3J 1S6

telephone:

514 934 3024

fax:

514 934 2245

web: www.yrh.com

e-mail: Telecom@yrh.com

Broadcast and

Telecommunications
Consultants